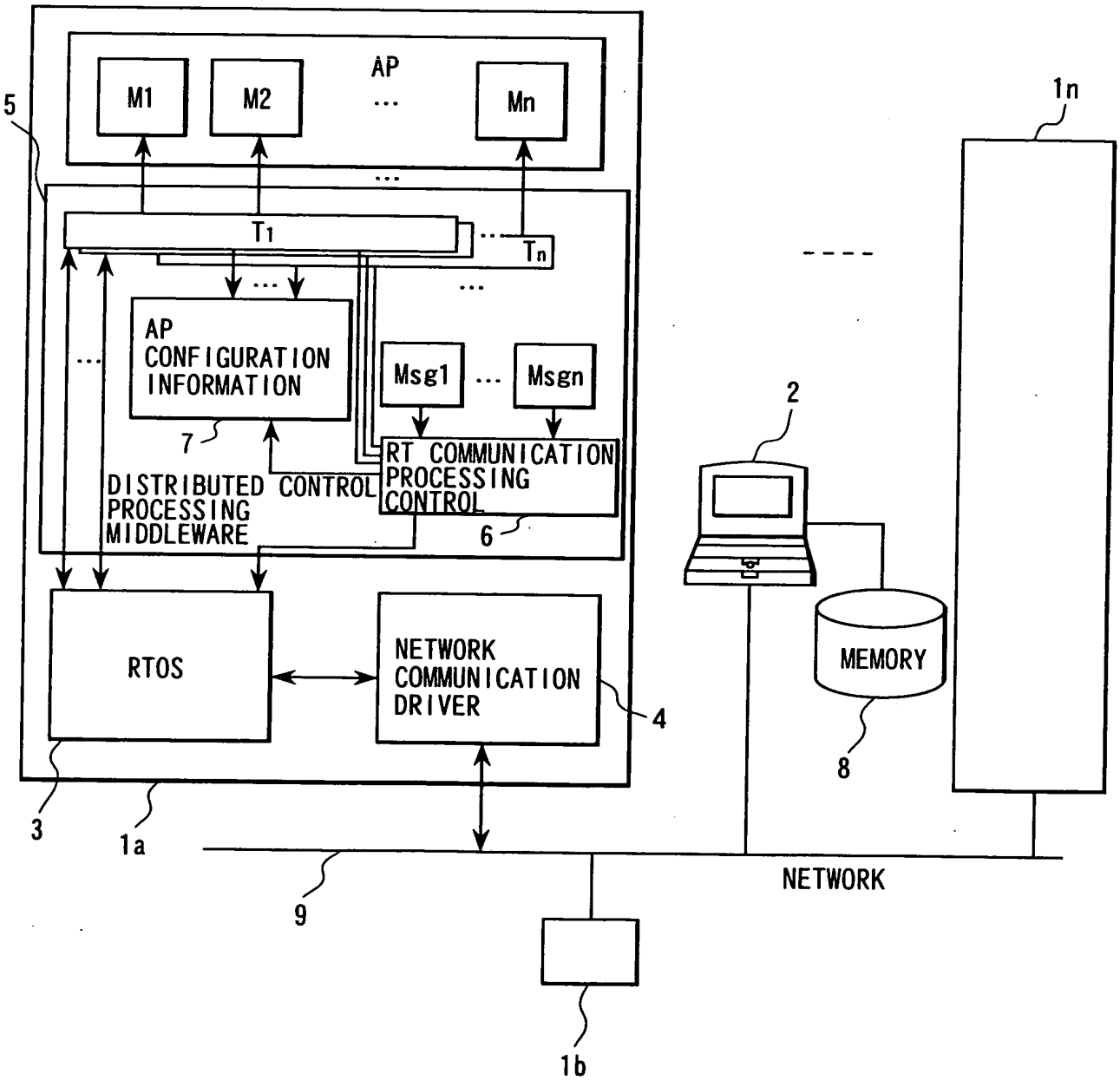
APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.1



APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

FIG.2

21a AP MODULE	21b NEXT EXECUTED MODULE
M1	Msg 1 SENDING
M2	M3
M3	NULL
M4	Msg 3 SENDING
M5	NULL
⋮	⋮
Mn	NULL

21

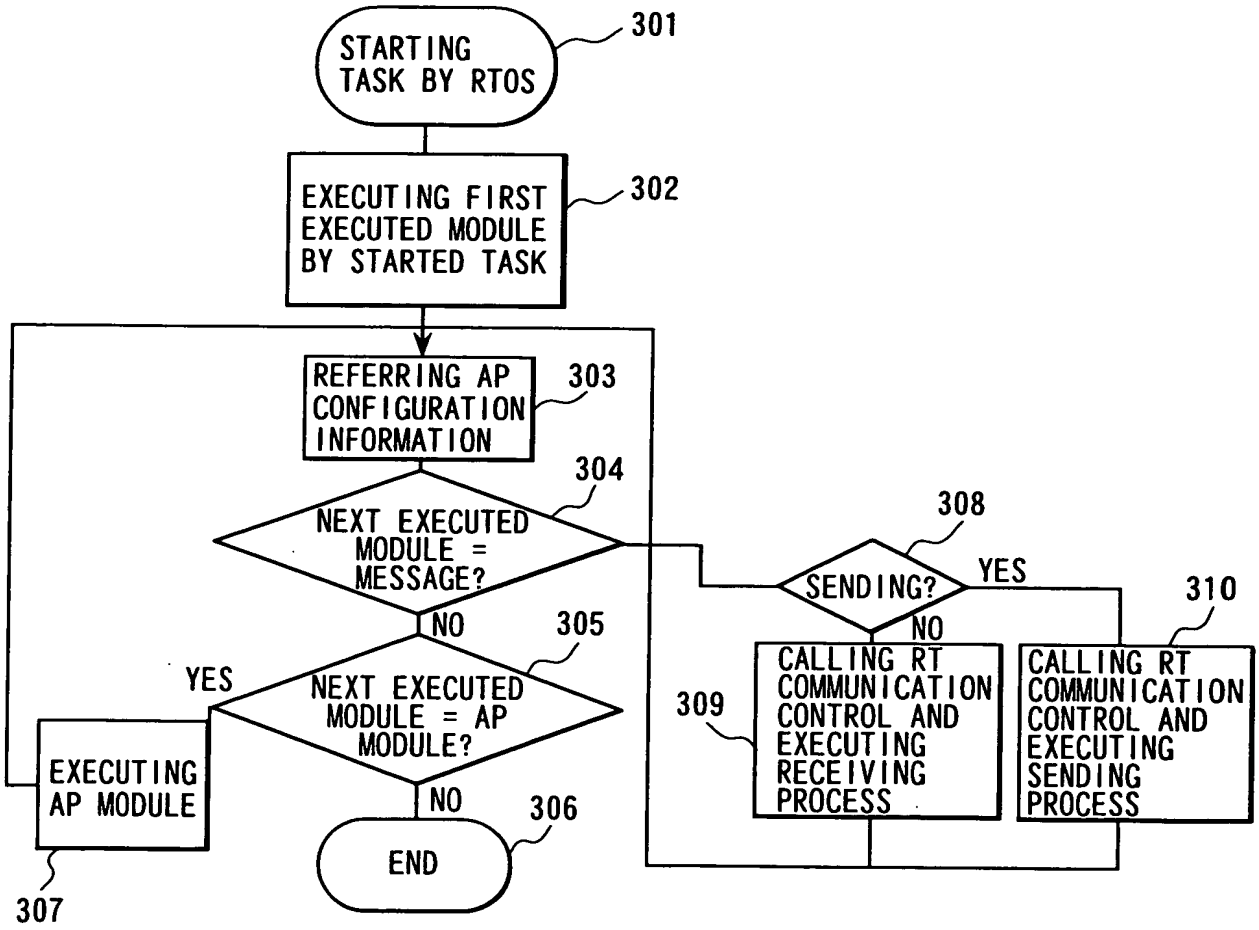
22a MESSAGE OBJECT NAME	22b PRIORITY OF COMMUNICATION PROCESSING	22c INTERNAL/ EXTERNAL COMMUNICATION	22d KIND OF COMMUNICATION SERVICE	22e AT SENDING	22a AT RECEIVING
Msg1	NULL	INTERNAL	INTERNAL	Msg1 RECEIVING	M2
Msg2	MIDDLE	EXTERNAL	EXTERNAL	NULL	M4
Msg3	LOW	EXTERNAL	EXTERNAL	M5	NULL
⋮		⋮			
Msgm	HIGH	EXTERNAL	EXTERNAL	NULL	NULL

22

APPROVED O.G. FIG.
BY
CLASS SUBCLASS
DRAFTSMAN

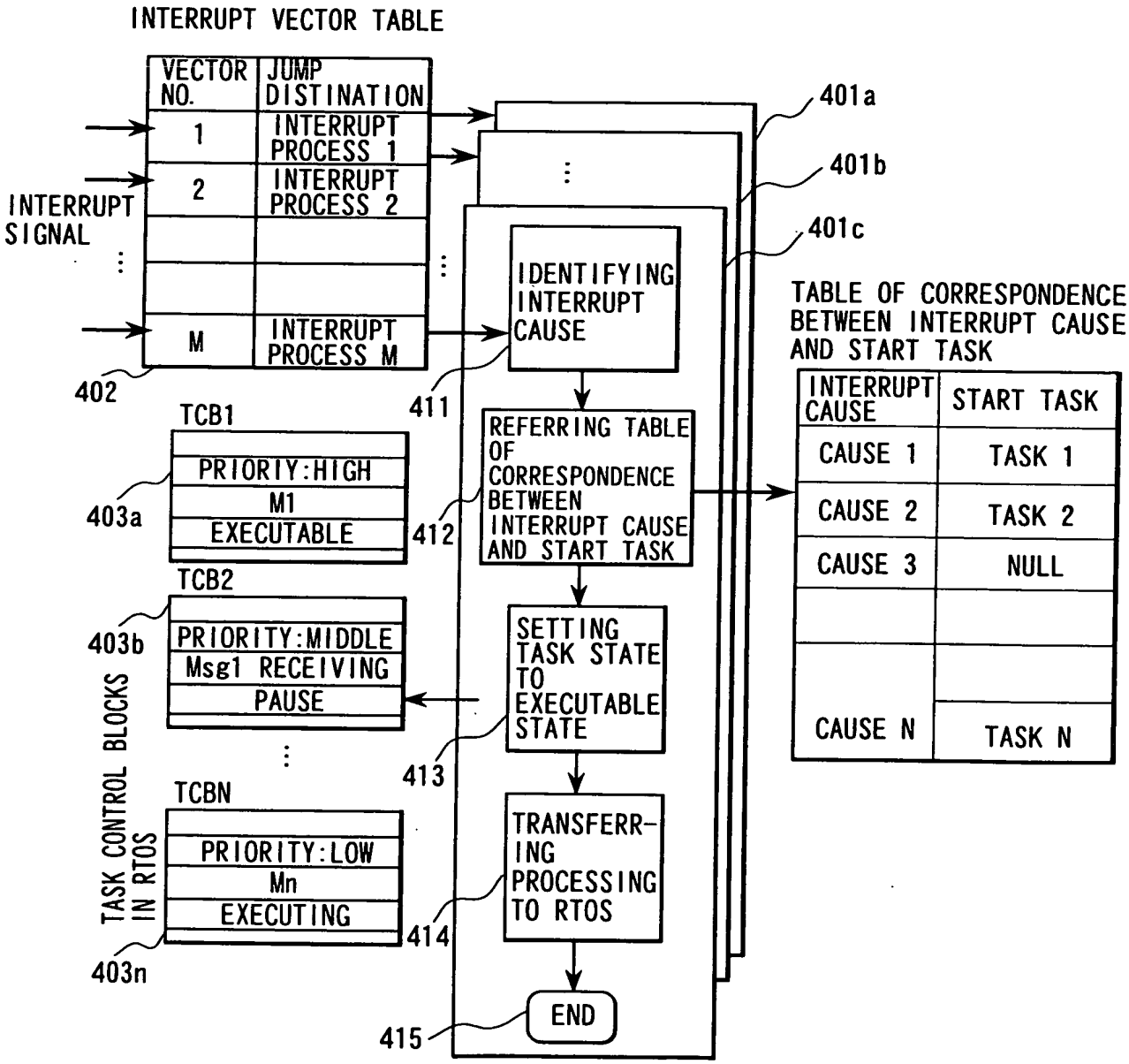
FIG.3

FLOW CHART SHOWING OPERATION OF MODULE STARTING CONTROL TASK



APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.4



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.5

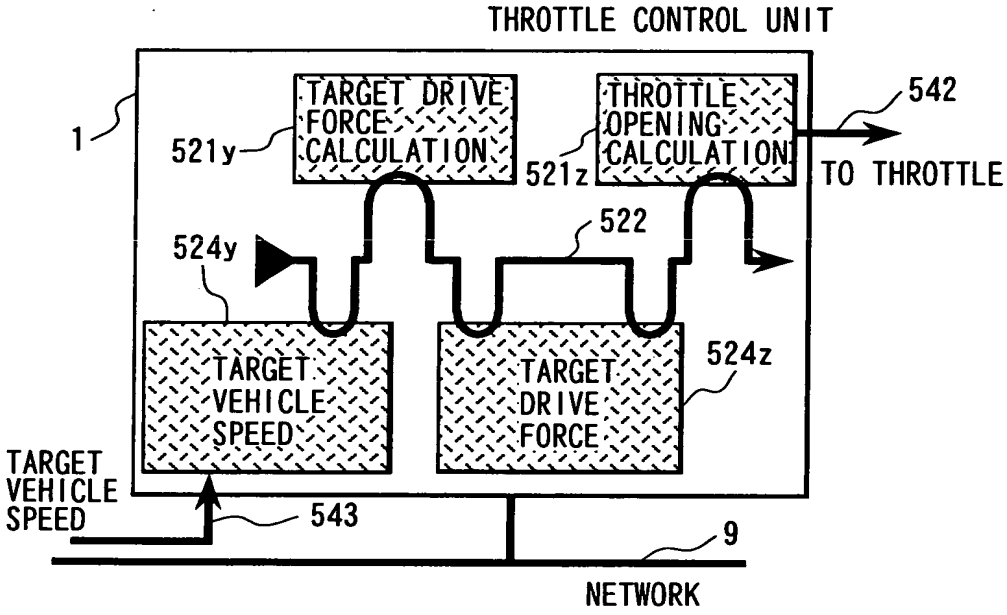
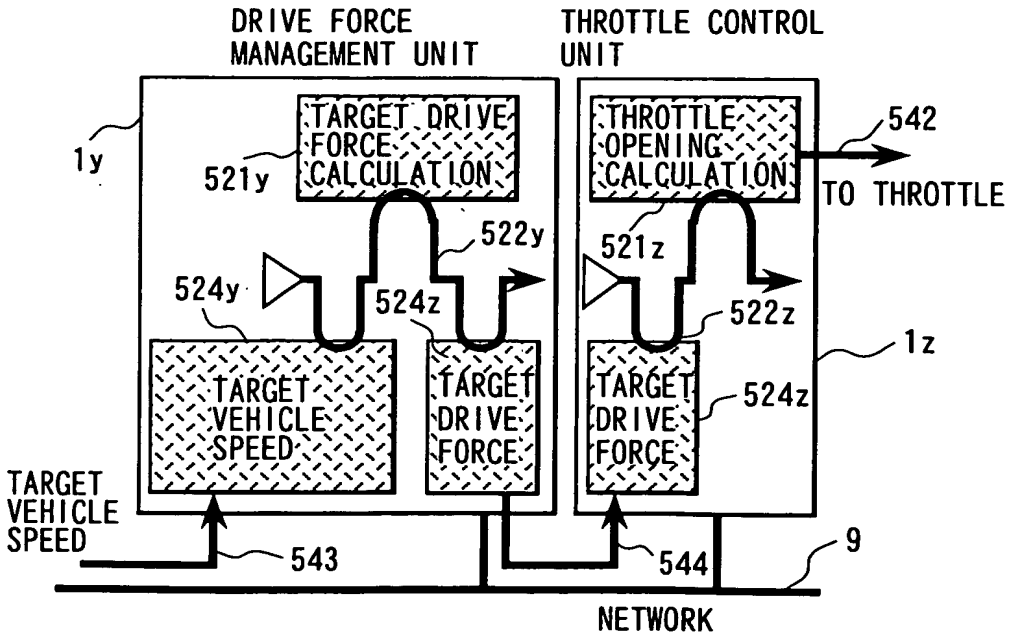


FIG.7



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.6(a)

INTERRUPT CAUSE	START TASK
30ms TIMER	MODULE START CONTROL TASK A

FIG.6(b)

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

FIG.6(c)

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FROCE, SENDING
THROTTLE OPENING CALCULATION	NULL

FIG.6(d)

				NEXT EXECUTED MODULE	
MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	AT SENDING	AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	ASYNCHRONOUS	NULL	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	NULL	INTERNAL	SYNCHRONOUS	TARGET DRIVE FORCE, SENDING	THROTTLE OPENING CALCULATION

APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

FIG.8(a)

INTERRUPT CAUSE	START TASK
30ms TIMER	TASK A

INTERRUPT CAUSE	START TASK
TARGET DRIVE FORCE RECEIVING	TASK B

FIG.8(b)

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

PRIORITY:HIGH
TARGET DRIVE FORCE RECEIVING

FIG.8(c)

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FROCE, SENDING
THROTTLE OPENING CALCULATION	NULL

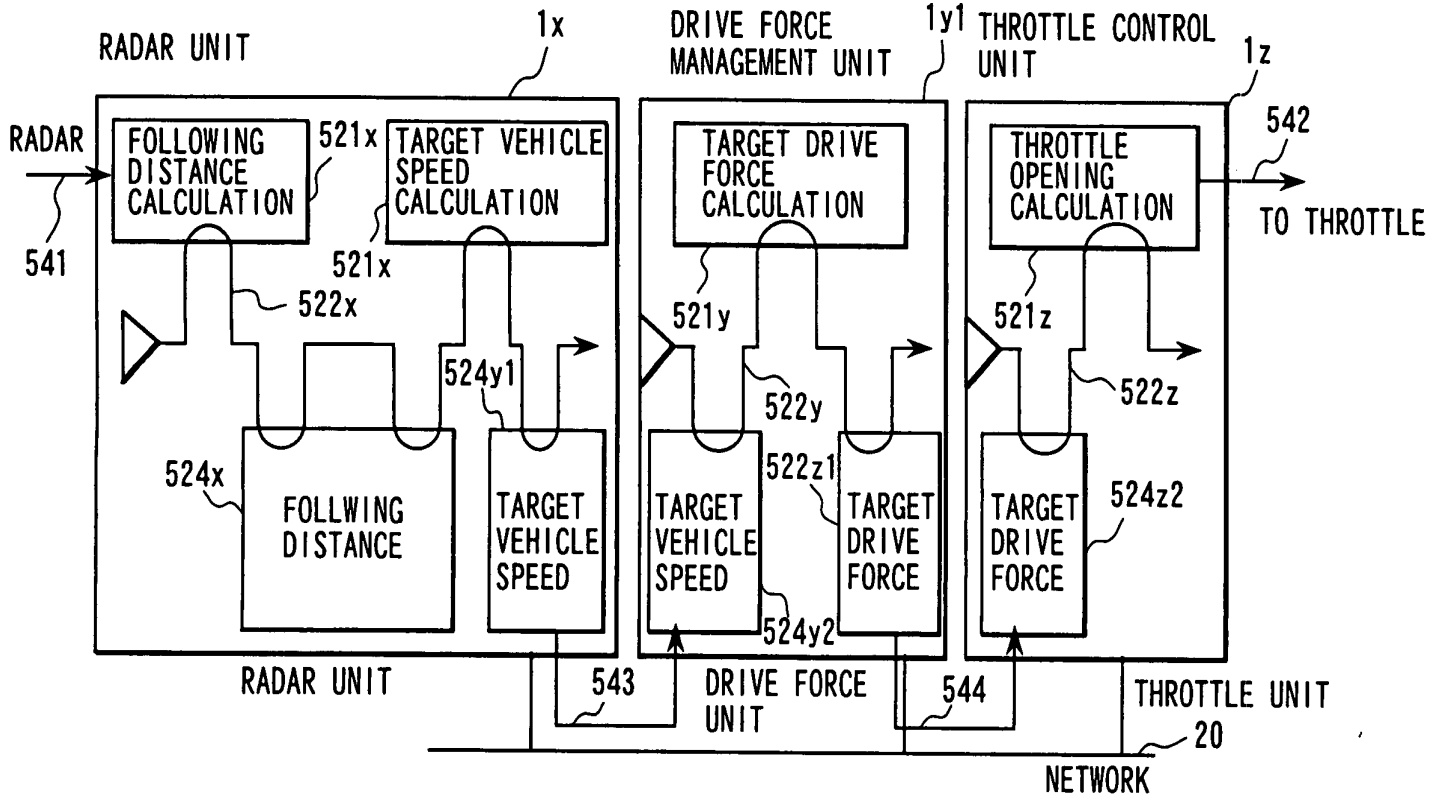
FIG.8(d)

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	NEXT EXECUTED MODULE: AT SENDING	NEXT EXECUTED MODULE: AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	ASYNCHRONOUS	NULL	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	HIGH	EXTERNAL	SYNCHRONOUS	NULL	THROTTLE OPENING CALCULATION

APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.9

PARAMETER CHANGE DUE TO ADDITION OF RADAR UNIT (FOLLOW-UP CONTROL)



APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.10

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
TARGET VEHICLE SPEED RECEIVING	TASK A

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT AND START TASK IN THROTTLE CONTROL UNIT

INTERRUPT CAUSE	START TASK
TARGET DRIVE FORCE RECEIVING	TASK B

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND START TASKIN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
30ms TAIMER	TASK C

FIG.11

TCB OF TASK A

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

TCB OF TASK B

PRIORITY:HIGH
TARGET DRIVE FORCE RECEIVING

TCB OF TASK C

PRIORITY:HIGH
FOLLOWING DISTANCE CALCULATION

APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.12

TABLE OF AP MODULE CONFIGURATION INFORMATION

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FORCE, SENDING
THROTTLE OPENING CALCULATION	NULL
FOLLOWING DISTANCE CALCULATION	FOLLOWING DISTANCE, SENDING
TARET VEHICLE SPEED CALCULATION	TARGET VEHICLE SPEED, SENDING

FIG.13

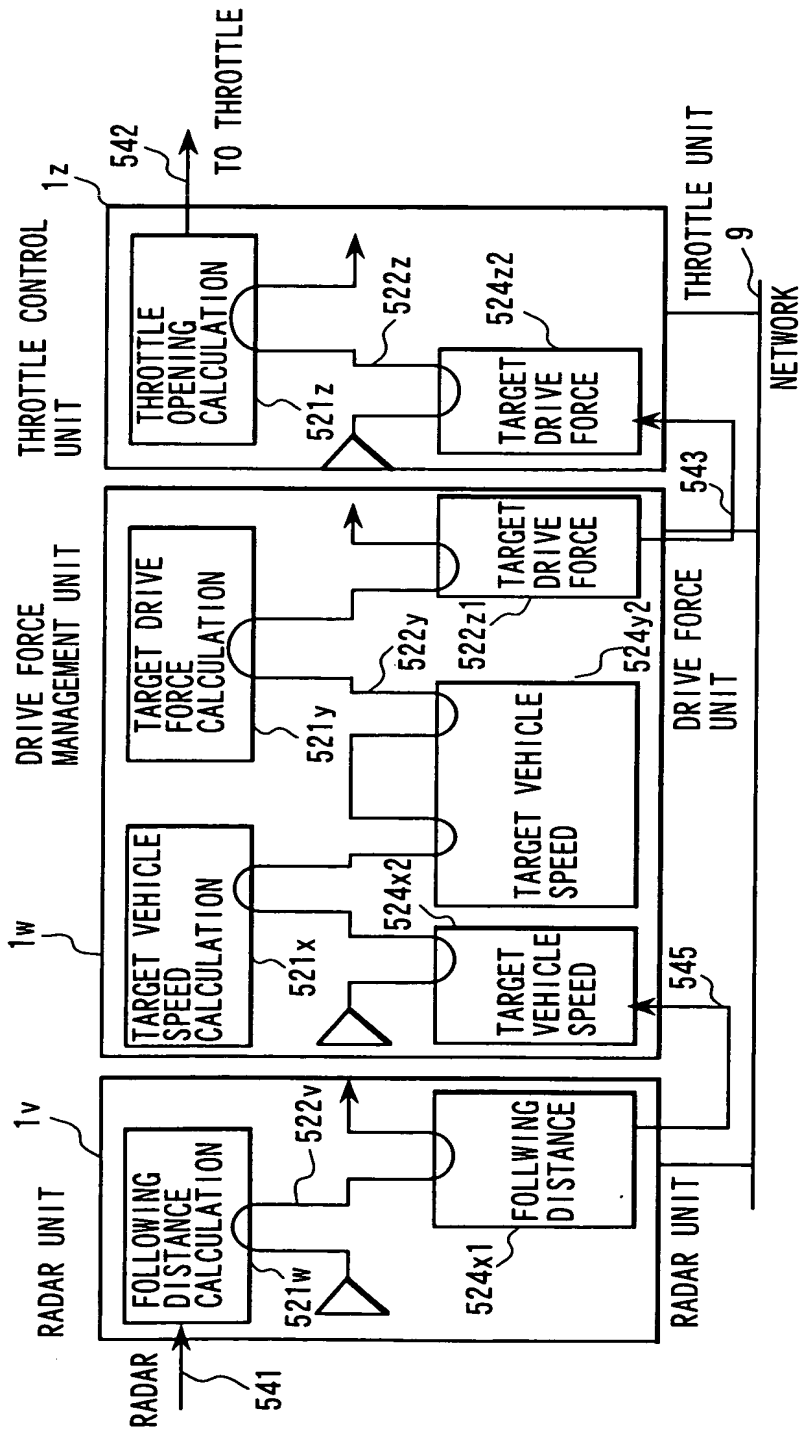
TABLE MESSAGE OBJECT CONFIGURATION INFORMATION

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	NEXT EXECUTED MODULE AT SENDING	NEXT EXECUTED MODULE AT RECEIVING
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	SYNCHRONOUS	NULL	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	HIGH	EXTERNAL	SYNCHRONOUS	NULL	THROTTLE OPENING CALCULATION
FOLLOWING DISTANCE	NULL	INTERNAL	SYNCHRONOUS	FOLLOWING DISTANCE, RECEIVING	TARGET VEHICLE SPEED CALCULATION

APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.14

PARAMETER CHANGE DUE TO ADDITION OF RADAR UNIT (FOLLOW-UP CONTROL)



APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.15

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
FOLLOWING DISTANCE CALCULATION	TASK A

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT AND START TASK IN THROTTLE CONTROL UNIT

INTERRUPT CAUSE	START TASK
TARGET DRIVE FORCE RECEIVING	TASK B

TABLE OF CORRESPONDENCE BETWEEN INTERRUPT CAUSE AND START TASK IN DRIVE FORCE MANAGEMENT UNIT

INTERRUPT CAUSE	START TASK
30ms TAIMER	TASK C

FIG.16

TCB OF TASK A

PRIORITY:HIGH
RECEIVING TARGET VEHICLE SPEED

TCB OF TASK B

PRIORITY:HIGH
TARGET DRIVE FORCE RECEIVING

TCB OF TASK C

PRIORITY:HIGH
FOLLOWING DISTANCE CALCULATION

APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.17

TABLE OF AP MODULE CONFIGURATION INFORMATION

AP MODULE	NEXT EXECUTED MODULE
TARGET DRIVE FORCE CALCULATION	TARGET DRIVE FORCE, SENDING
THROTTLE OPENING CALCULATION	NULL
FOLLOWING DISTANCE CALCULATION	FOLLOWING DISTANCE, SENDING
TARET VEHICLE SPEED CALCULATION	TARGET VEHICLE SPEED, SENDING

FIG.18

TABLE OF MESSAGE OBJECT CONFIGURATION INFORMATION

MESSAGE OBJECT NAME	PRIORITY OF COMMUNICATION PROCESSING	INTERNAL/ EXTERNAL COMMUNICATION	KIND OF COMMUNICATION SERVICE	AT SENDING NEXT EXECUTED MODULE	AT RECEIVING NEXT EXECUTED MODULE
TARGET VEHICLE SPEED	MIDDLE	INTERNAL	SYNCHRONOUS	TARGET VEHICLE SPEED, RECEIVING	TARGET DRIVE FORCE CALCULATION
TARGET DRIVE FORCE	HIGH	EXTERNAL	SYNCHRONOUS	NULL	THROTTLE OPENING CALCULATION
FOLLOWING DISTANCE	NULL	INTERNAL	SYNCHRONOUS	FOLLOWING DISTANCE, RECEIVING	TARGET VEHICLE SPEED CALCULATION

APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.19

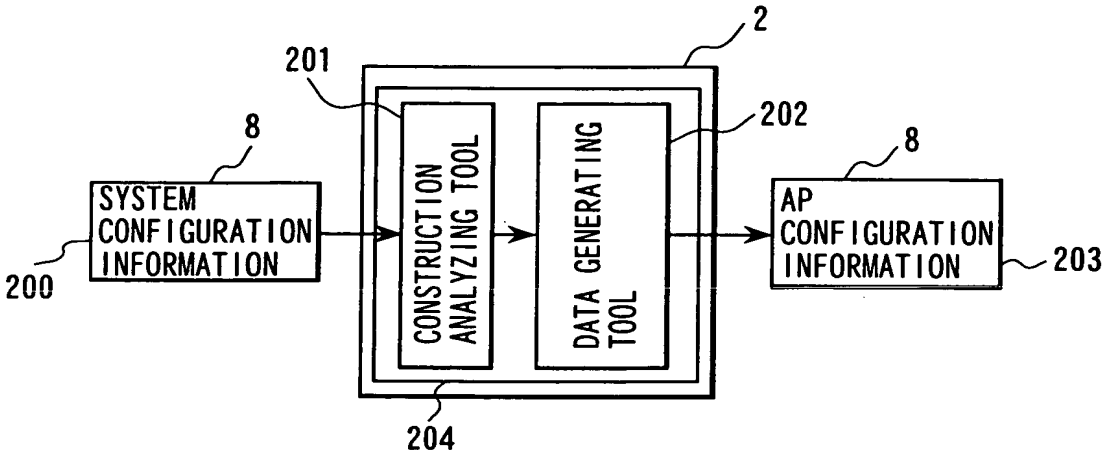
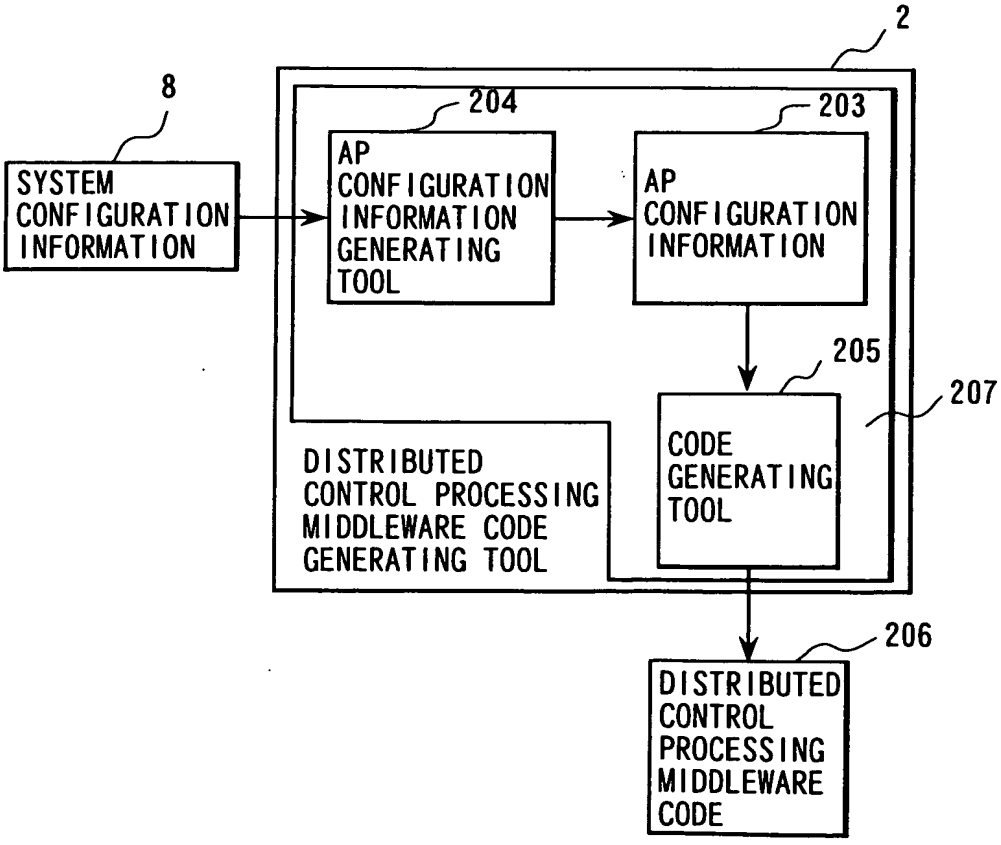
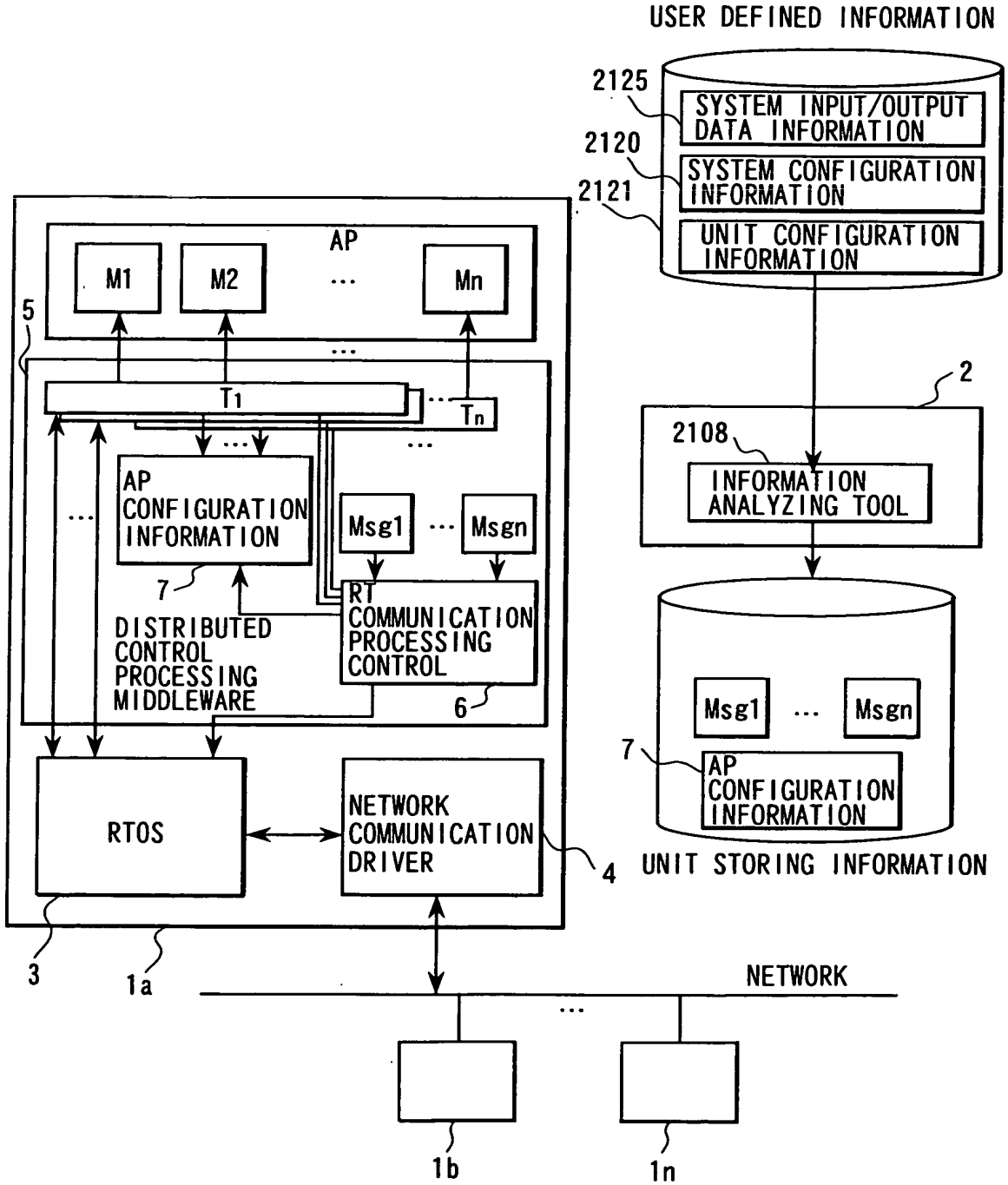


FIG.20



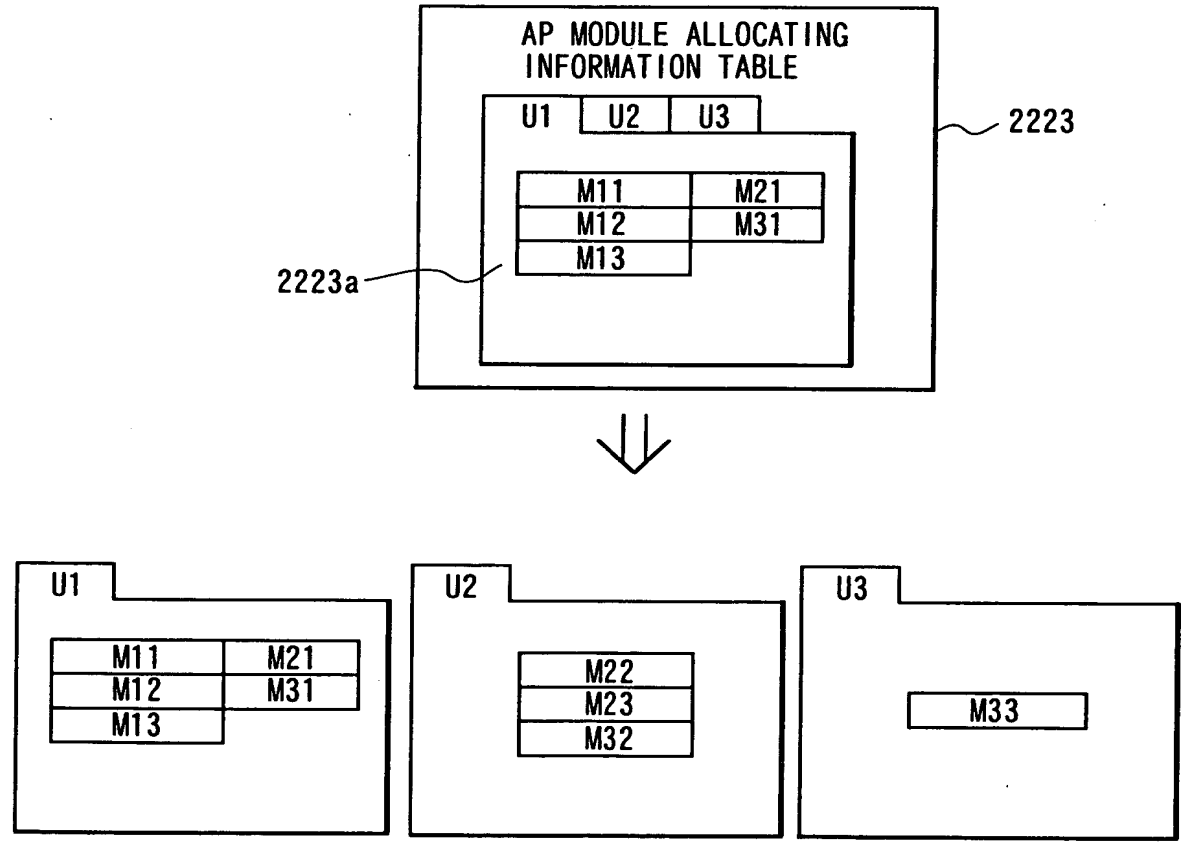
APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

FIG.21



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.22



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.23

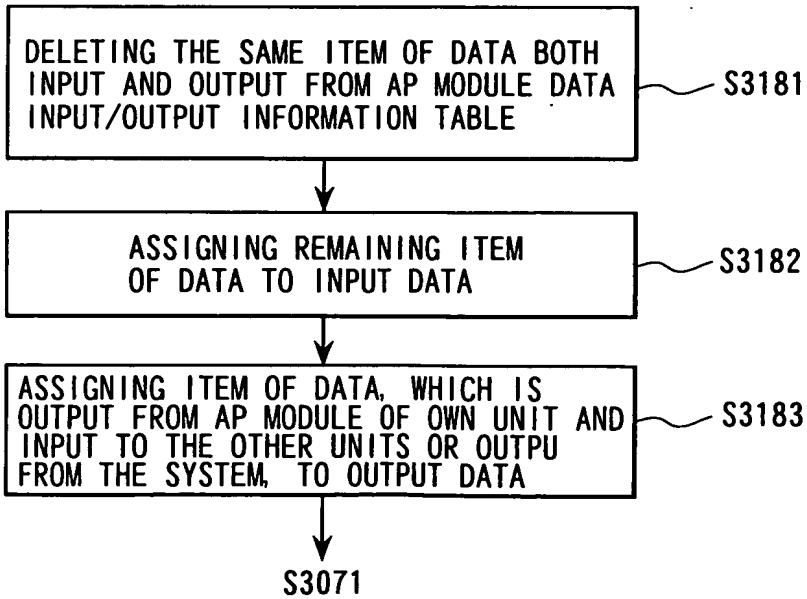
SYSTEM INPUT/OUTPUT INFORMATION TABLE

INPUT	OUTPUT
D11	D14
D21	D24
D31	D34

2326

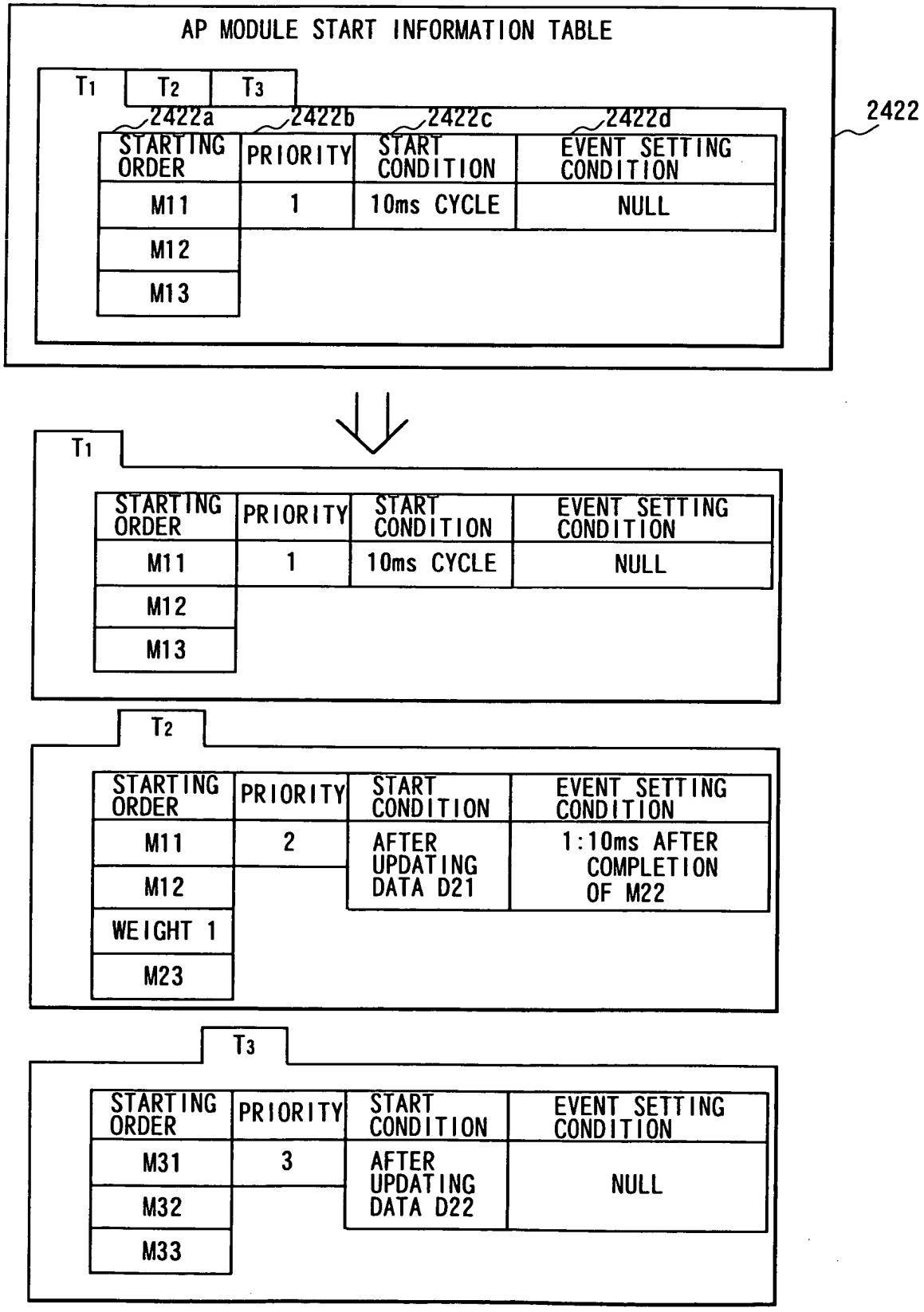
FIG.31

FLOW OF EXTRACTING COMMUNICATION DATA BETWEEN UNITS (S3070)



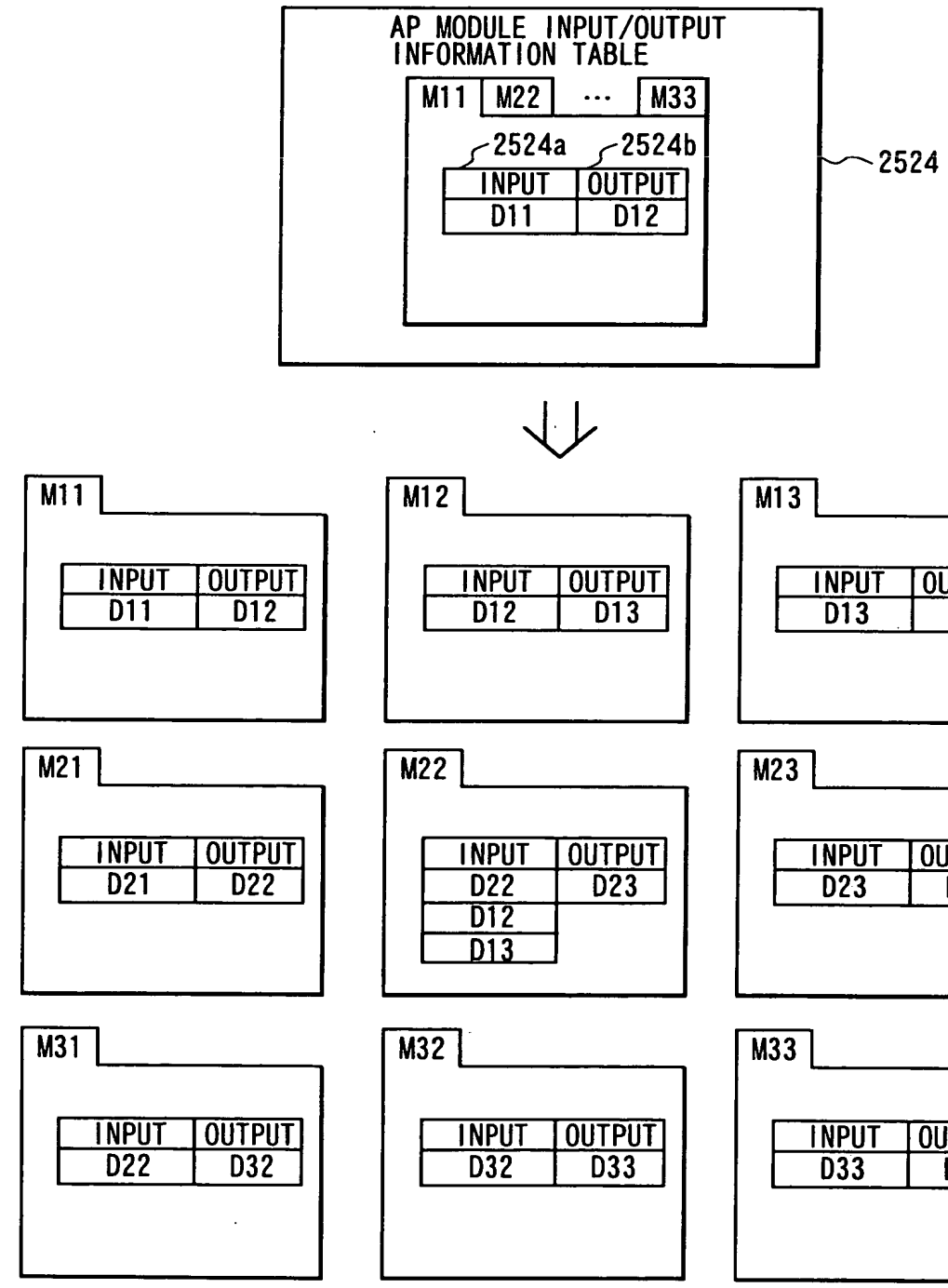
APPROVED O.G. FIG.
BY CLASS SUBCLASS

FIG.24



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.25



APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

FIG.26(a)

AP MODULE/MESSAGE OBJECT START INFORMATION TABLE FOR UNIT1

T1

2630a STARTING ORDER	2630b PRIORITY	2630c START CONDITION	2630d EVENT SETTING CONDITION
Meg11 RECEIVING	1	10ms CYCLE	NULL
M11			
M12			
Meg12-13 SENDING			
M13			

FIG.26(b)

T2

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg21 RECEIVING	2	AFTER UPDATING DATA Mge21	NULL
M21			
Meg22 SENDING			

FIG.26(c)

T3

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg22 RECEIVING	3	AFTER UPDATING DATA Mge22	NULL
M31			
Meg32 SENDING			

APPROVED - BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.27(a)

AP MODULE/MESSAGE OBJECT START INFORMATION TABLE FOR UNIT2

T2

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg22 RECEIVING	1	AFTER UP DATING Meg22	1:10ms AFTER COMPLETING M22
Meg12-13 SENDING			
M22			
WEIGHT 1			
M23			
Meg22 RECEIVING			

FIG.27(b)

T3

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg32 RECEIVING	2	AFTER UPDATING DATA Mge32	NULL
M32			
Meg33 SENDING			

FIG.28

T3

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg33 RECEIVING	1	AFTER UPDATING DATA Mge33	NULL
M31			
Meg34 SENDING			

APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.29(a)

MESSAGE OBJECT INFORMATION TABLE FOR UNIT 1

2931a DATA	2931b MESSAGE OBJECT	2931c READ/ WRITE	2931d SEND/ RECEIVE	2931e ACTION AFTER UPDATING	2931f PRIORITY	2931g UPDATING CONDITION
D11	Msg11	READ	RECEIVING	NULL	NULL	AFTER ARRIVAL
D12 D13	Msg12-13	WRITE	SENDING	NULL	2	AFTER M12
D14	Msg14	WRITE	SENDING	NULL	1	AFTER M13
D21	Msg21	READ	RECEIVING	TASK2 START	NULL	AFTER ARRIVAL
D22	Msg22	WRITE/READ	SENDING	TASK3 START	2	AFTER M21
D32	Msg32	WRITE	SENDING	NULL	2	AFTER M31

FIG.29(b)

MESSAGE OBJECT INFORMATION TABLE FOR UNIT 2

DATA	MESSAGE OBJECT	READ/ WRITE	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D22	Msg22	READ	RECEIVING	TASK2 START	NULL	AFTER ARRIVAL
D12 D13	Msg12-13	READ	RECEIVING	NULL	NULL	AFTER ARRIVAL
D24	Msg24	WRITE	SENDING	NULL	2	AFTER M23
D32	Msg32	READ	RECEIVING	TASK3 START	NULL	AFTER ARRIVAL
D33	Msg33	WRITE	SENDING	NULL	3	AFTER M32

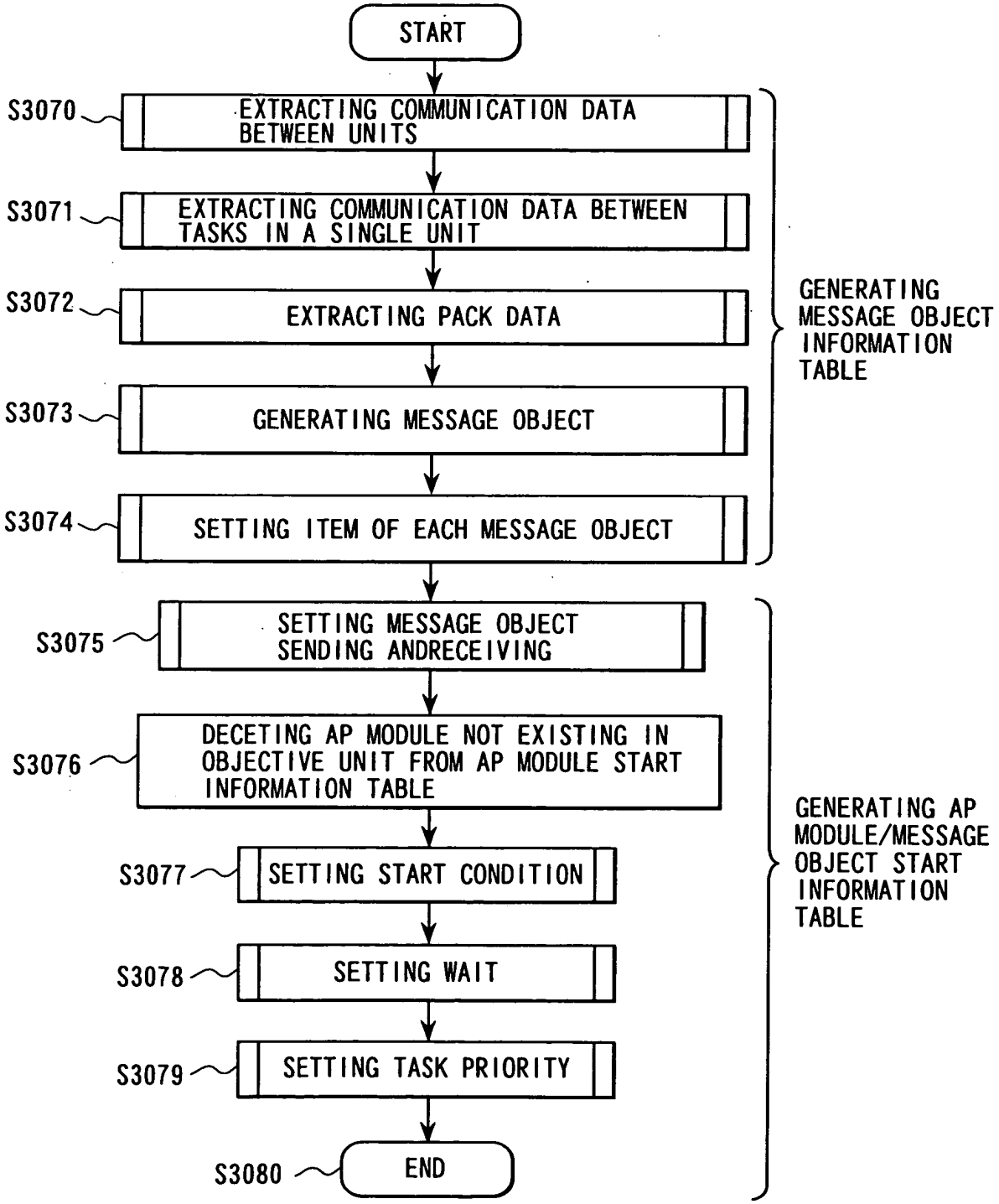
FIG.29(c)

MESSAGE OBJECT INFORMATION TABLE FOR UNIT 3

DATA	MESSAGE OBJECT	READ/ WRITE	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D33	Msg22	READ	RECEIVING	TASK3 START	NULL	AFTER ARRIVAL
D34	Msg24	WRITE	SENDING	NULL	2	AFTER M23

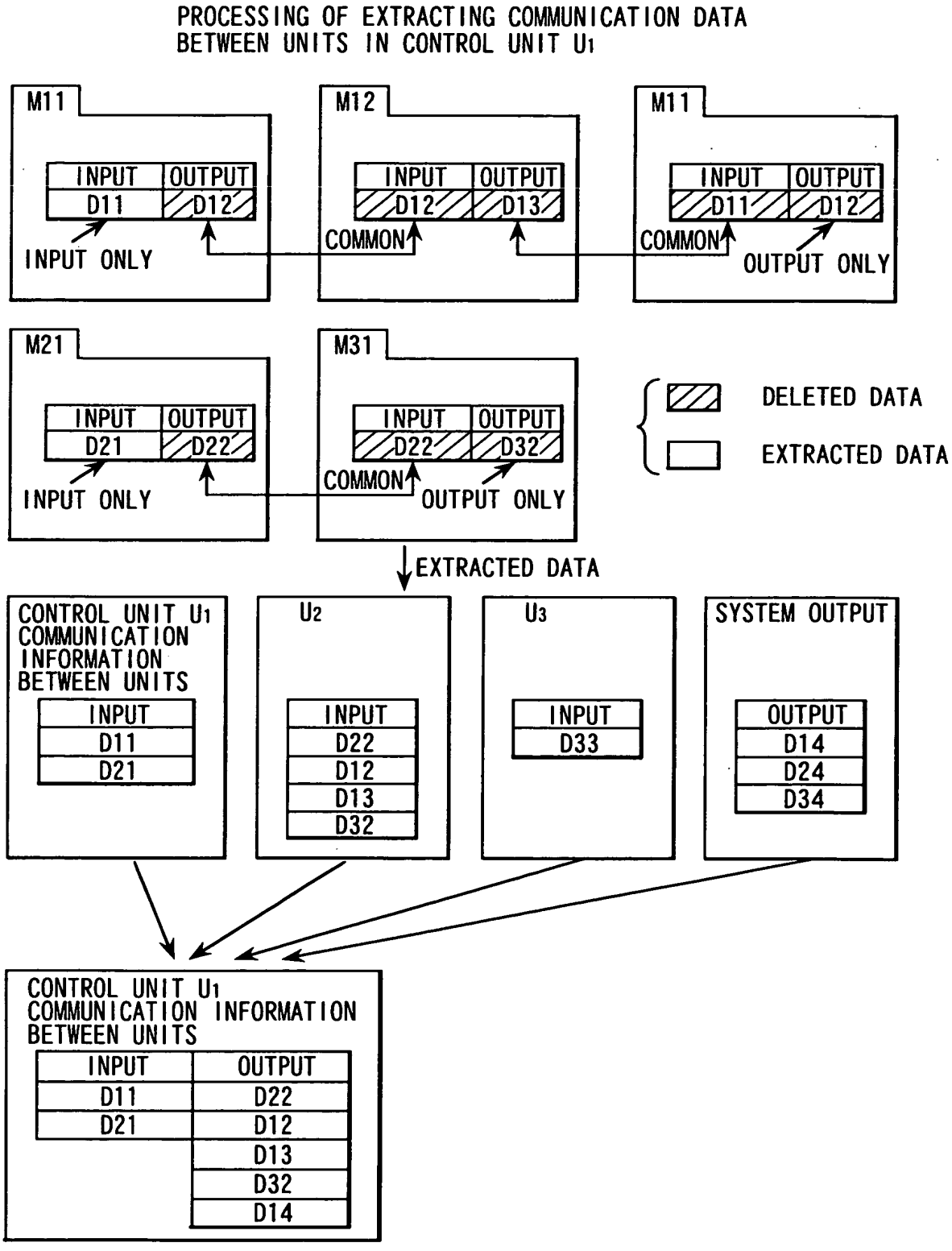
APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.30



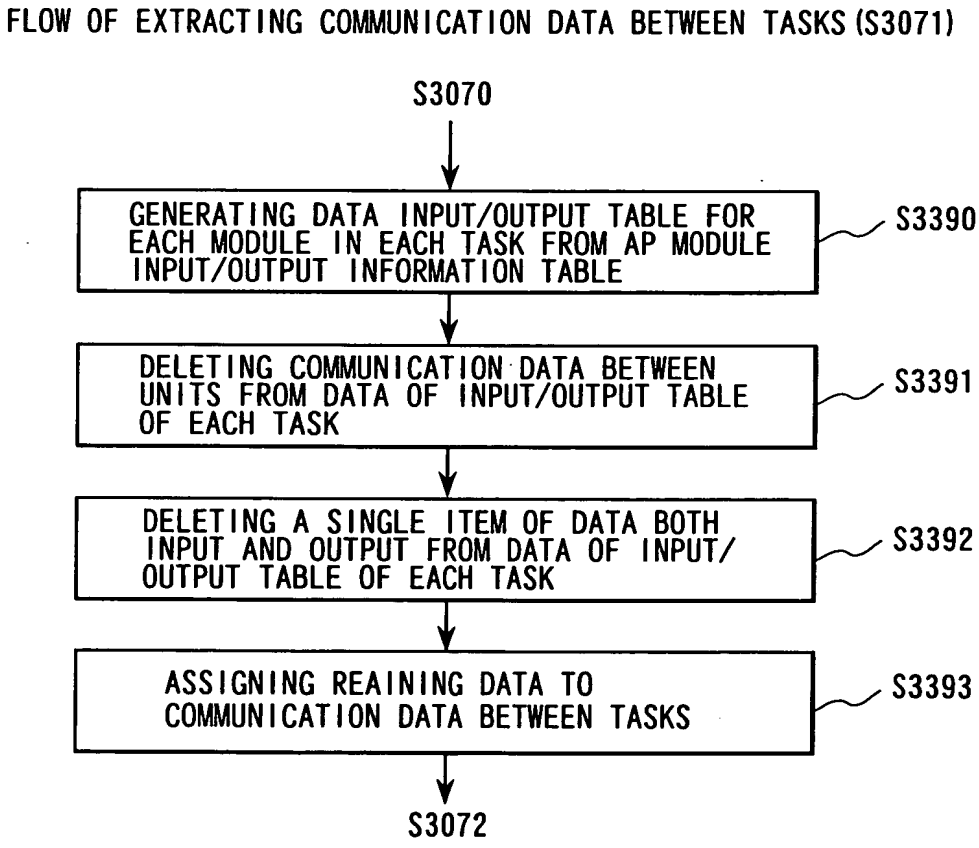
APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.32



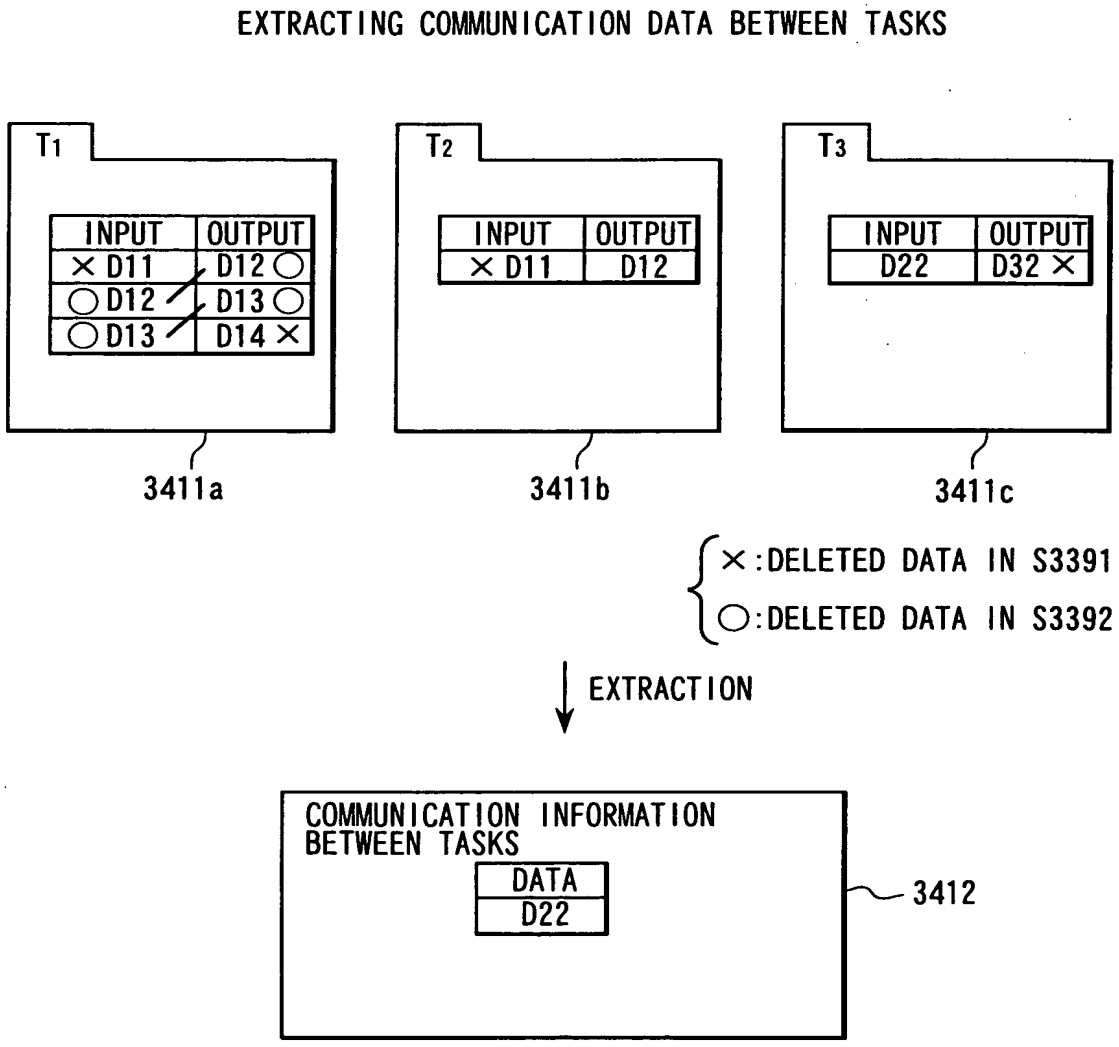
APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.33



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.34



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.35

FLOW OF EXTRACTING DATA TO BE PACKED (S3072)

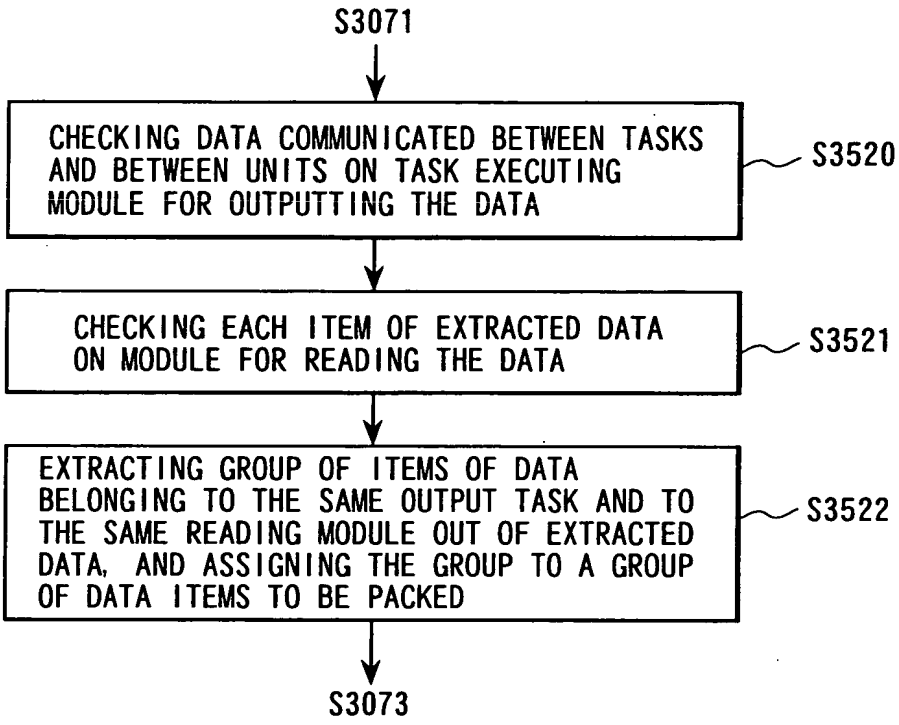


FIG.36

PACK EXTRACTING TABLE

DATA	OUTPUT TASK	READING M
D22	T_2	M31, M22
D11	—	M11
D21	—	M21
D14	T_1	—
D32	T_3	—
D12	T_1	M22
D13	T_1	M22

PACK

3630

APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.37

FLOW OF GENERATING MESSAGE OBJECT (S3073)

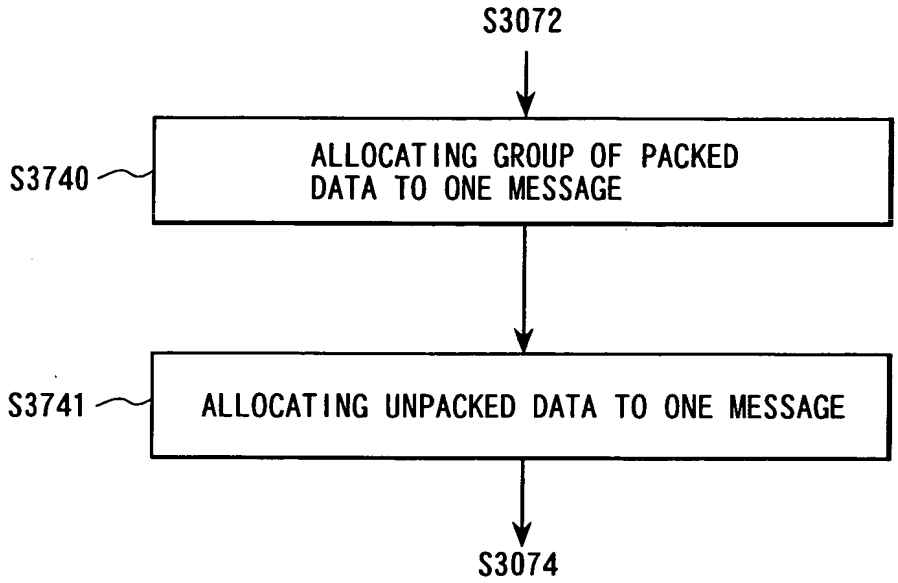
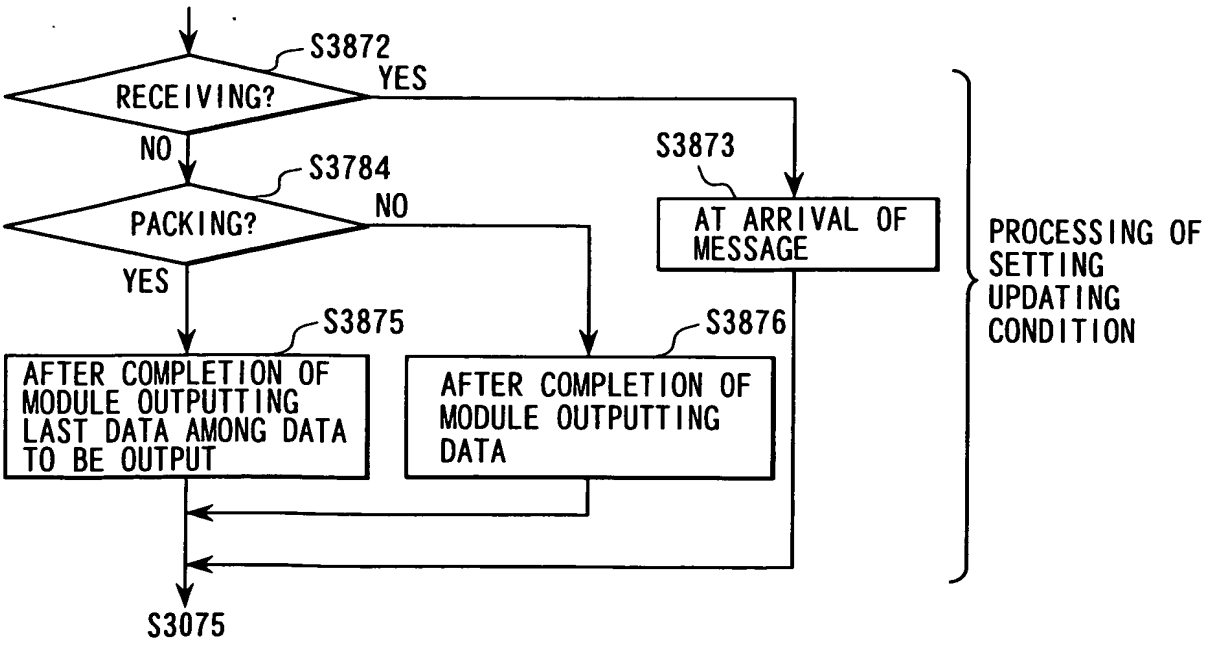


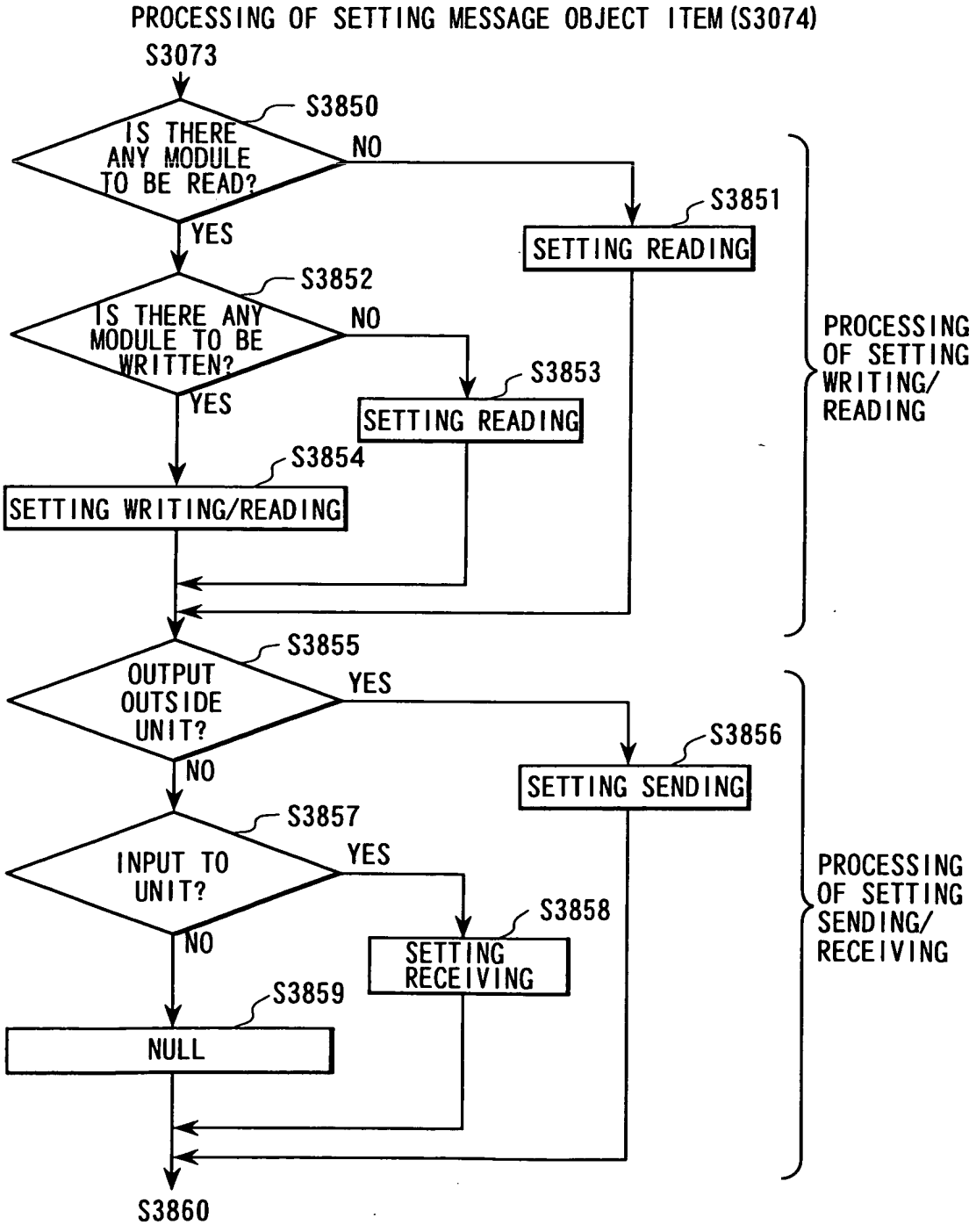
FIG.38

PROCESSING OF SETTING MESSAGE OBJECT ITEM (S3074)



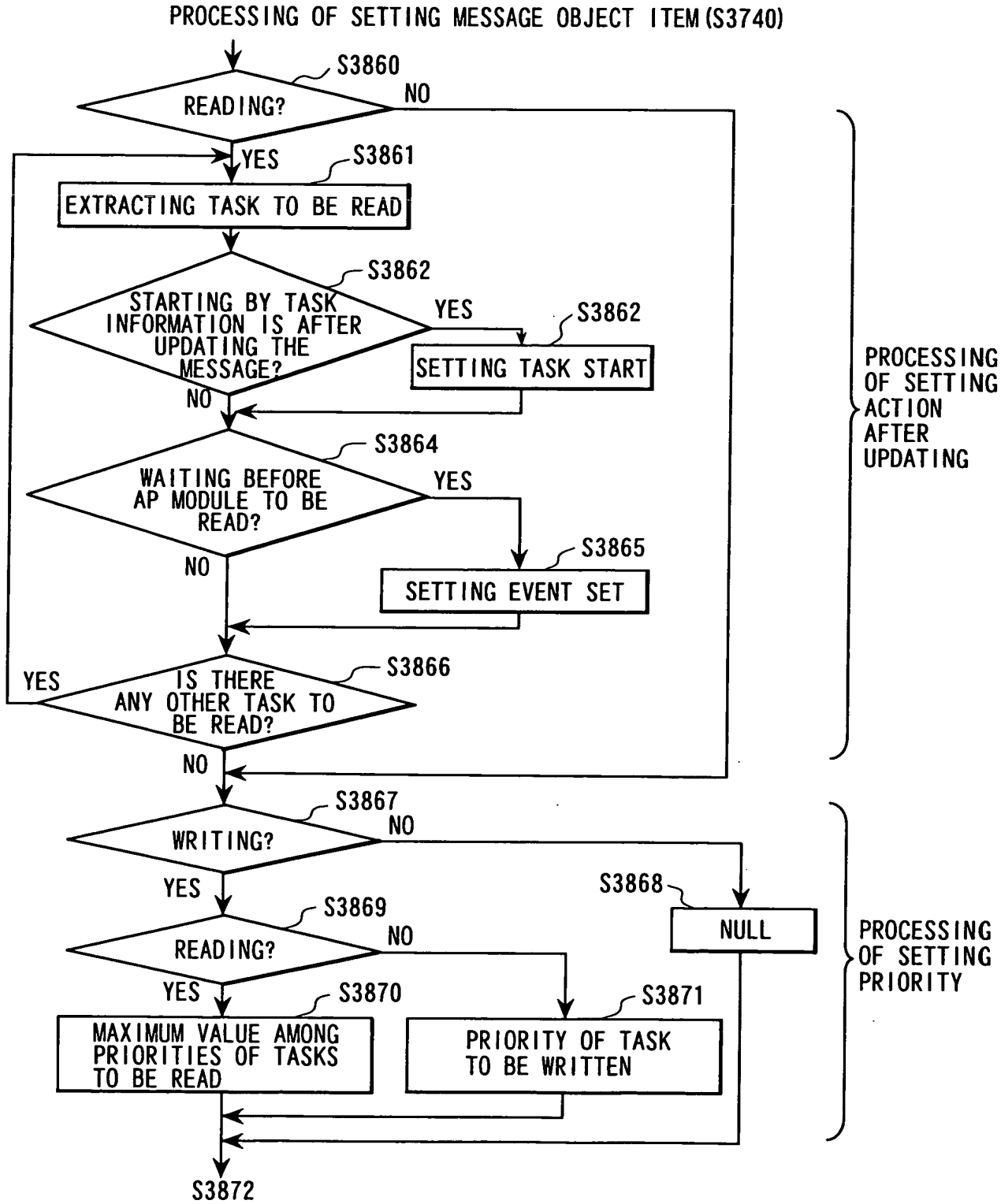
APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.38



APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

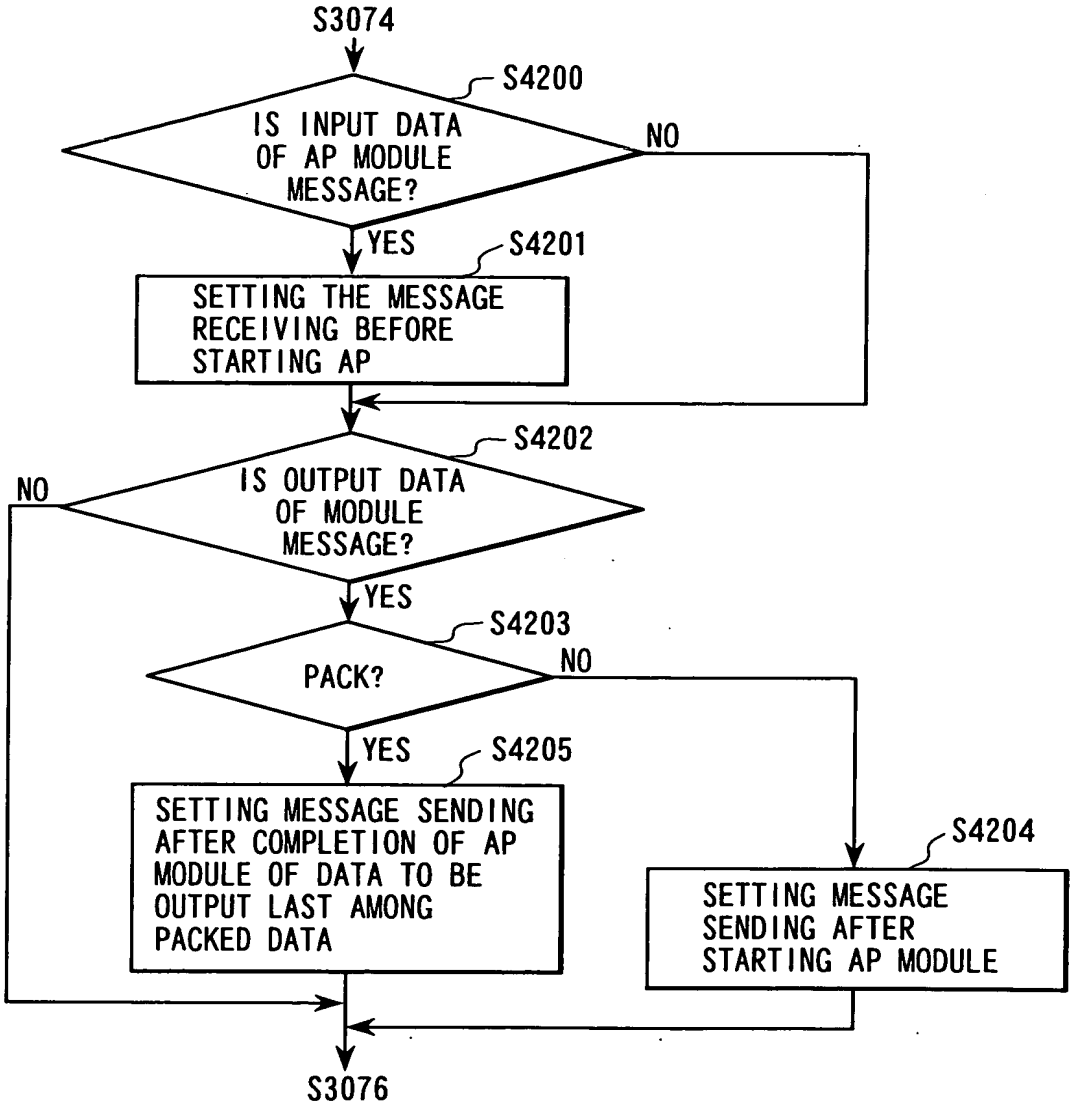
FIG.39



U.S. Fig.
CLASS SUBCLASS
BY
DRAFTSMAN

FIG.41

FLOW OF SETTING MESSAGE OBJECT SENDING/RECEIVING (S3075)



APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.42

FLOW OF SETTING START CONDITION (3077)

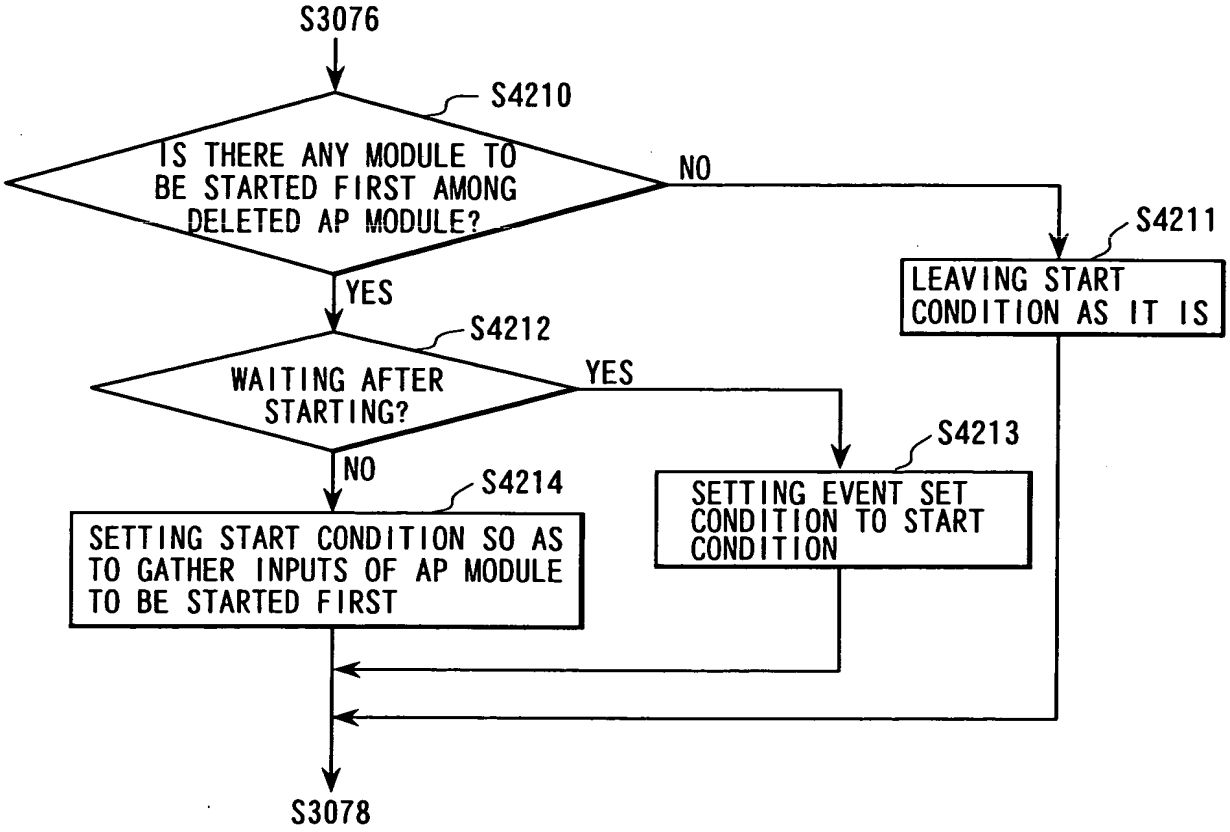
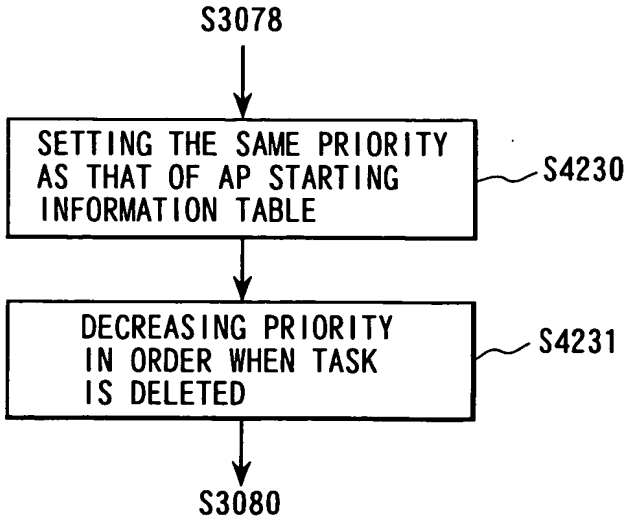


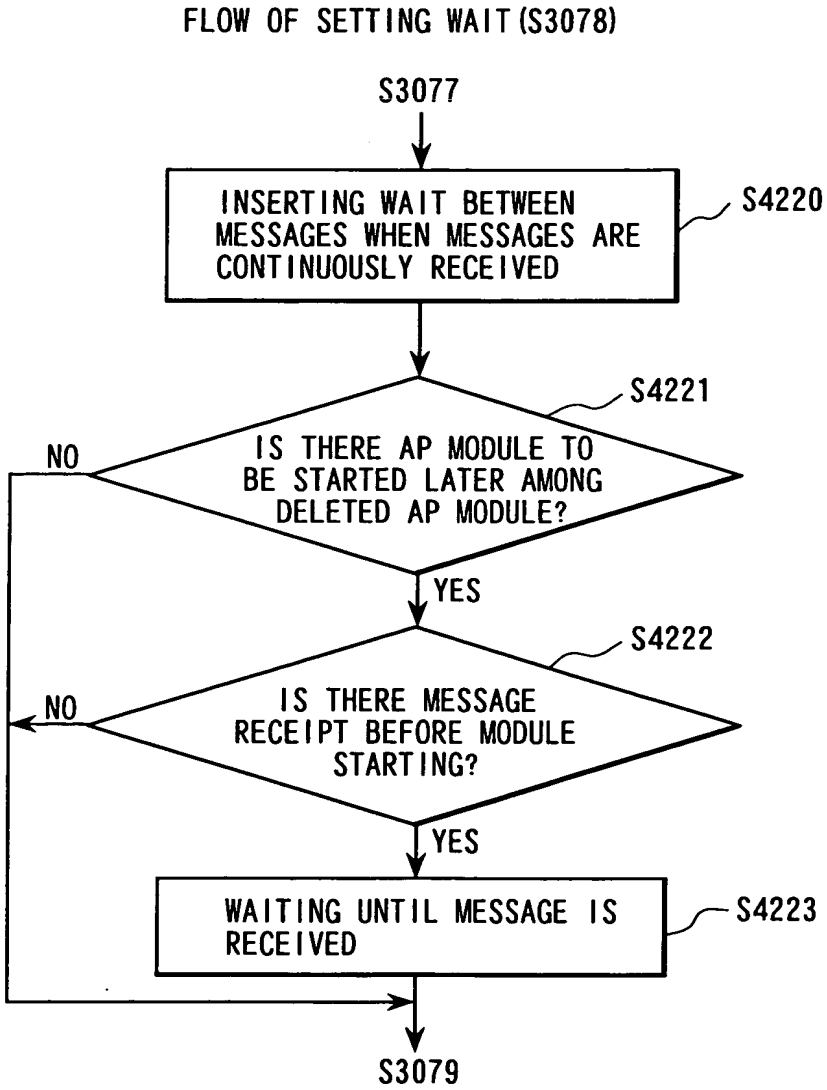
FIG.44

FLOW OF SETTING TASK PRIORITY (S3079)



APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

FIG.43



APPROVED
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.45(a)

COMMUNICATION INFORMATION TABLE

4580

4580a DATA	4580b PRIORITY	4580c DIRECT/ CYCLE (hour)	4580d ACTION AT RECEIVING	4580e TIME-OUT	4580f NOMSG ALLOWABLE NUMBER OF TIMES	4580g START TASK ID AT OCCURRENCE OF ERROR	4580h Ack PRESENCE/ ABSENCE
D12	3	CYCLE (10)	+TASK3 EVENT SET	10	10	TASK10	PRESENCE
D23	—	—	+TASK2 EVENT SET	10	10	TASK10	

FIG.45(b)

PACK INFORMATION TABLE

4581a DATA	4581b PRIORITY	4581c DIRECT/ CYCLE (hour)	4581d ACTION AT RECEIVING	4581e TIME-OUT	4581f NOMSG ALLOWABLE NUMBER OF TIMES	4581g START TASK ID AT OCCURRENCE OF ERROR	4581h Ack PRESENCE/ ABSENCE	4581i SENDING TIMING	4581j COMMUNICATION ALONE
D12, D3, D22	—	—	—	—	—	—	—	AFTER UPDATING D12	D22

ALL AFTER UPDATING
ANY TIME AFTER UPDATING

APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.46(a)

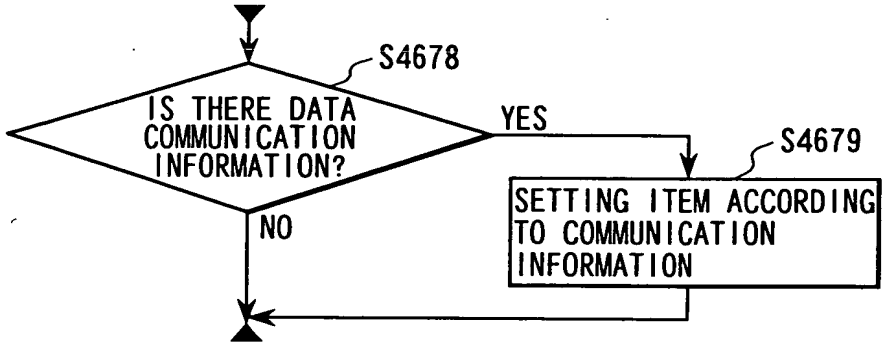
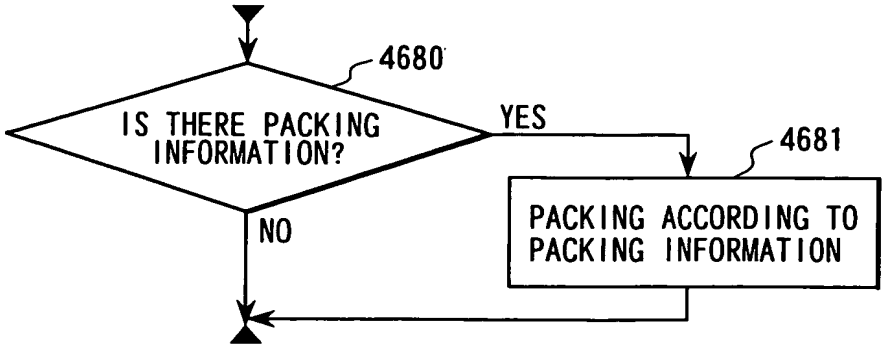
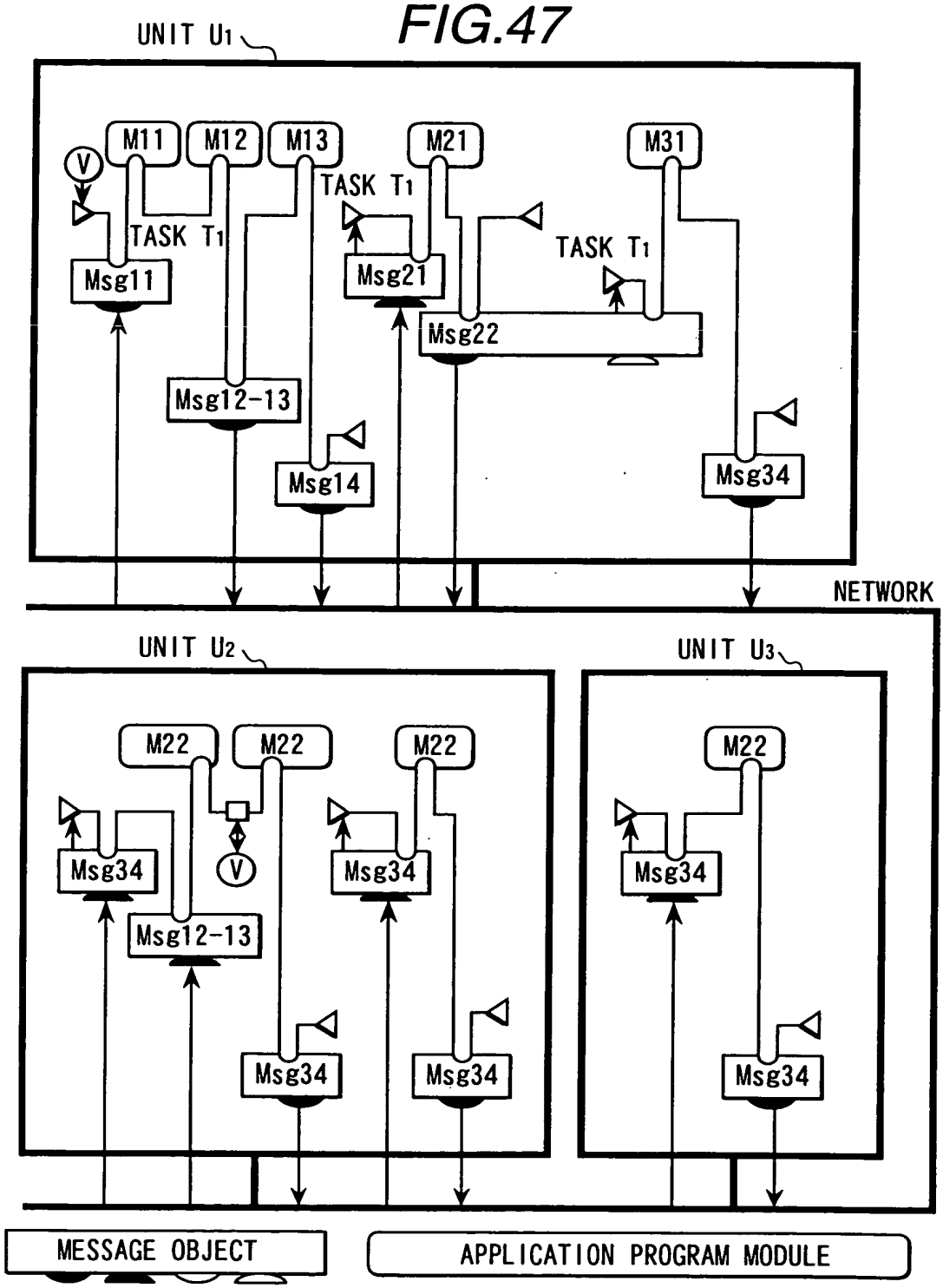


FIG.46(b)



APPROVED BY DRAFTSMAN
O.C. FIG.
CLASS SUBCLASS

FIG.47



UPDATING MESSAGE BY RECIVING FROM OUTSIDE OF UNIT
SENDING TO OUTSIDE OF UNIT
UPDATING MESSAGE BY TASK INSIDE UNIT
THERE IS READING BY TASK INSIDE UNIT

TASK START
TASK END
WAIT

APPROVED O.G. FIG.
BY CLASS SUBCLASS
DRAFTSMAN

FIG.48

MESSAGE OBJECT INFORMATION TABLE

DATA	MESSAGE	WRITE/ READ	SEND/ RECEIVE	ACTION AFTER UPDATING	PRIORITY	UPDATING CONDITION
D12 D13	Msg12-13	WRITE/ READ	NULL	NULL	2	AFTER M12
D22	Msg22	WRITE/READ	NULL	TASK3 START	3	AFTER M21
D11	Msg11	READ	RECEIVE	NULL	NULL	AFTER ARRIVAL
D21	Msg21	READ	RECEIVE	TASK2 START	NULL	AFTER ARRIVAL
D14	Msg14	WRITE	SEND	NULL	1	AFTER M13
D24	Msg24	WRITE	SEND	NULL	2	AFTER M23
D34	Msg34	WRITE	SEND	NULL	3	AFTER M33

APPROVED O.G. FIG.
BY | CLASS | SUBCLASS
DRAFTSMAN

FIG.49

EXAMPLE OF AP MODULE/MESSAGE OBJECT START INFORMATION TABLE

TASK 1

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg11 RECEIVING	1	10ms CYCLE	NULL
M11			
M12			
Meg12-13 SENDING			
M13			
Meg12-13 SENDING			

TASK 2

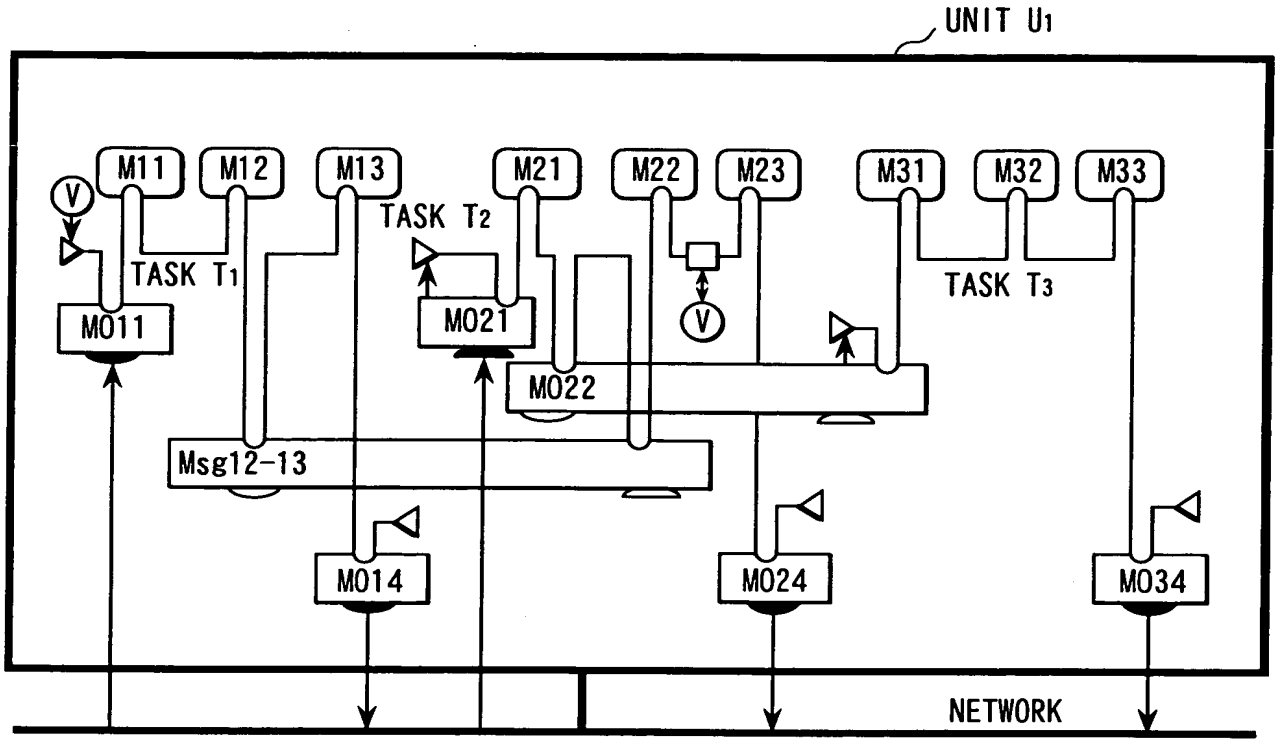
STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg21 RECEIVING	2	AFTER UPDATING Meg21	1:10ms AFTER COMPLETION OF M22
M21			
Meg22 SENDING			
Meg12-13 SENDING			
M22			
WEIGHTING 1			
M23			
Meg23 SENDING			

TASK 3

STARTING ORDER	PRIORITY	START CONDITION	EVENT SETTING CONDITION
Meg22 RECEIVING	3	AFTER UPDATING Meg22	NULL
M31			
M32			
M33			
Meg34 RECEIVING			

APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.50



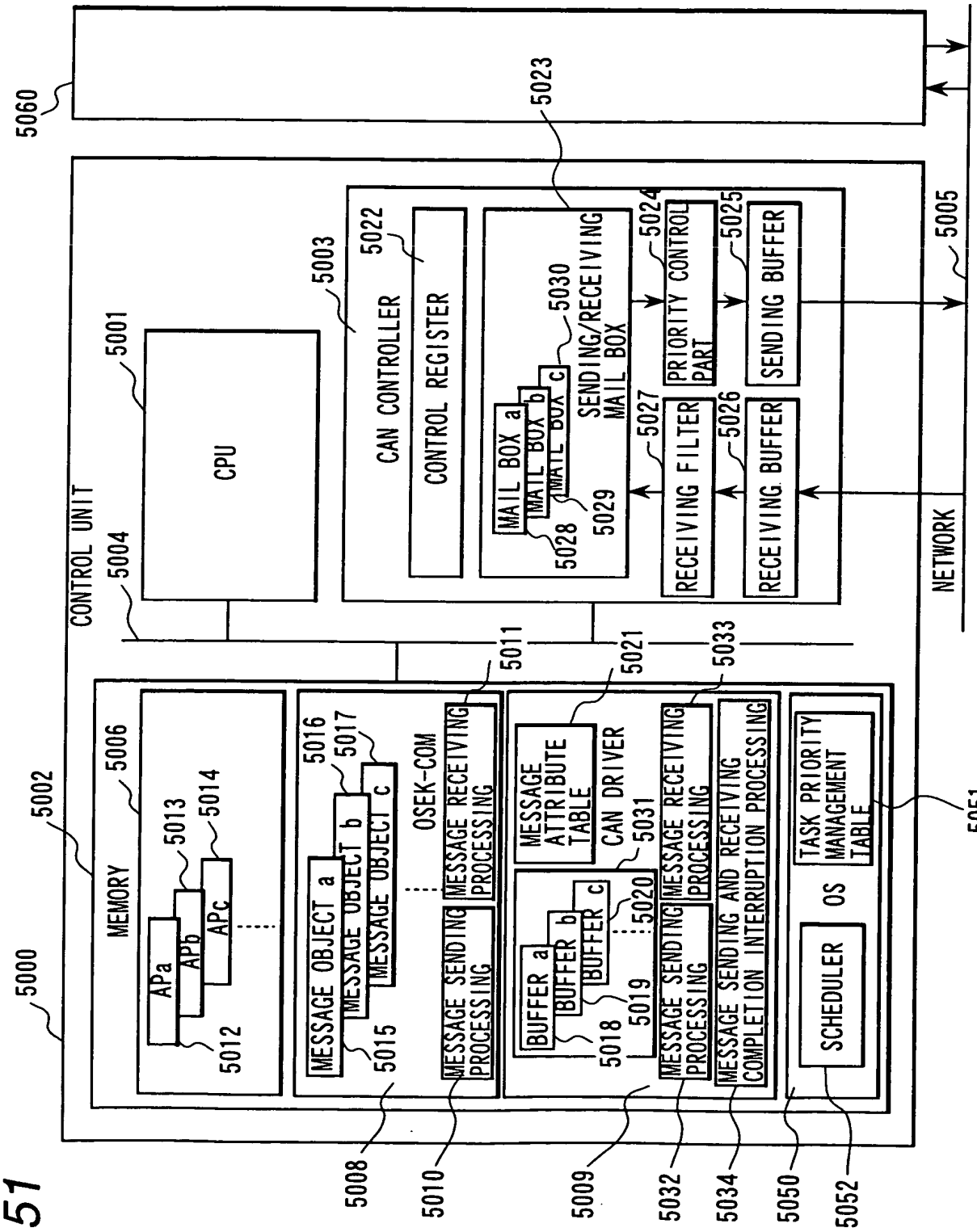
MESSAGE OBJECT

APPLICATION PROGRAM MODULE

- UPDATING MESSAGE BY RECIVING FROM OUTSIDE OF UNIT
- SENDING TO OUTSIDE OF UNIT
- UPDATING MESSAGE BY TASK INSIDE UNIT
- THERE IS READING BY TASK INSIDE UNIT
- TASK START
- TASK END
- WAIT

APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.51



APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

FIG.52

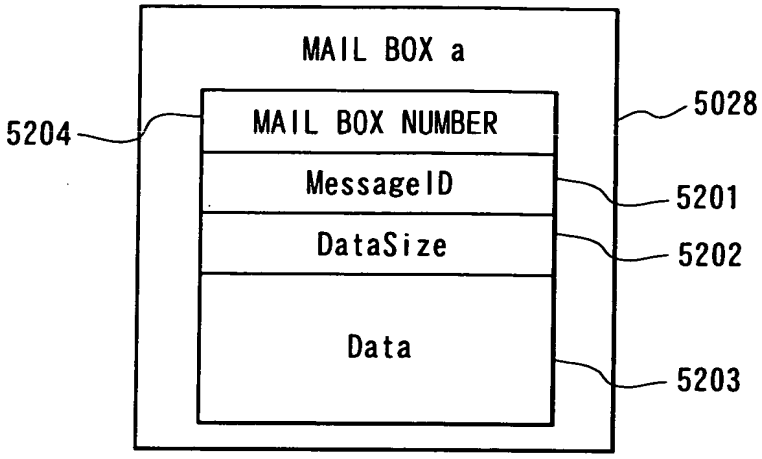


FIG.53

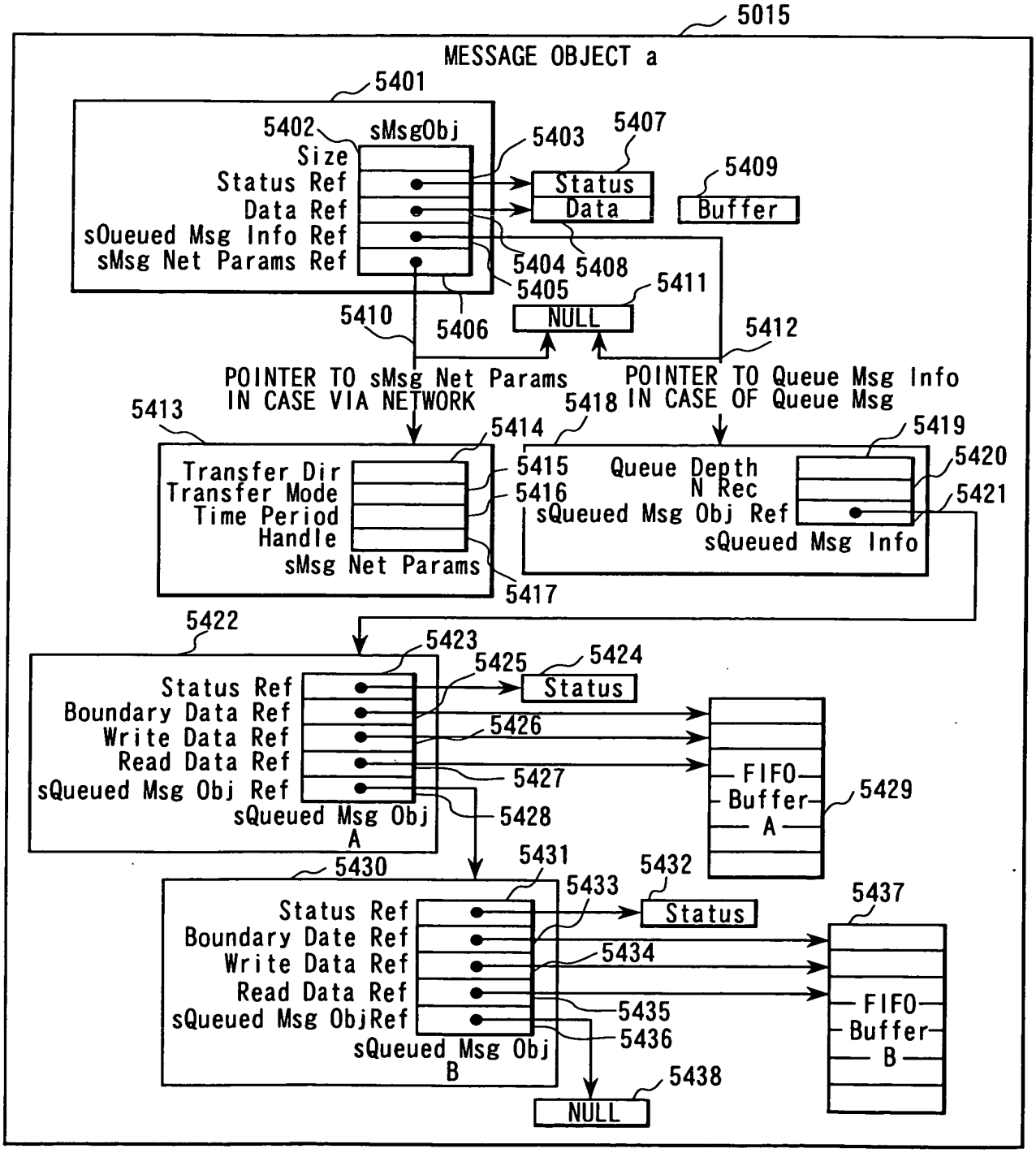
5022

CONTROL REGISTER

5301 MAIL BOX NUMBER	5302 TXPR	5303 TXACK	5304 RXPR	5305 MBIMR
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
.	.	.	.	.
.	.	.	.	.

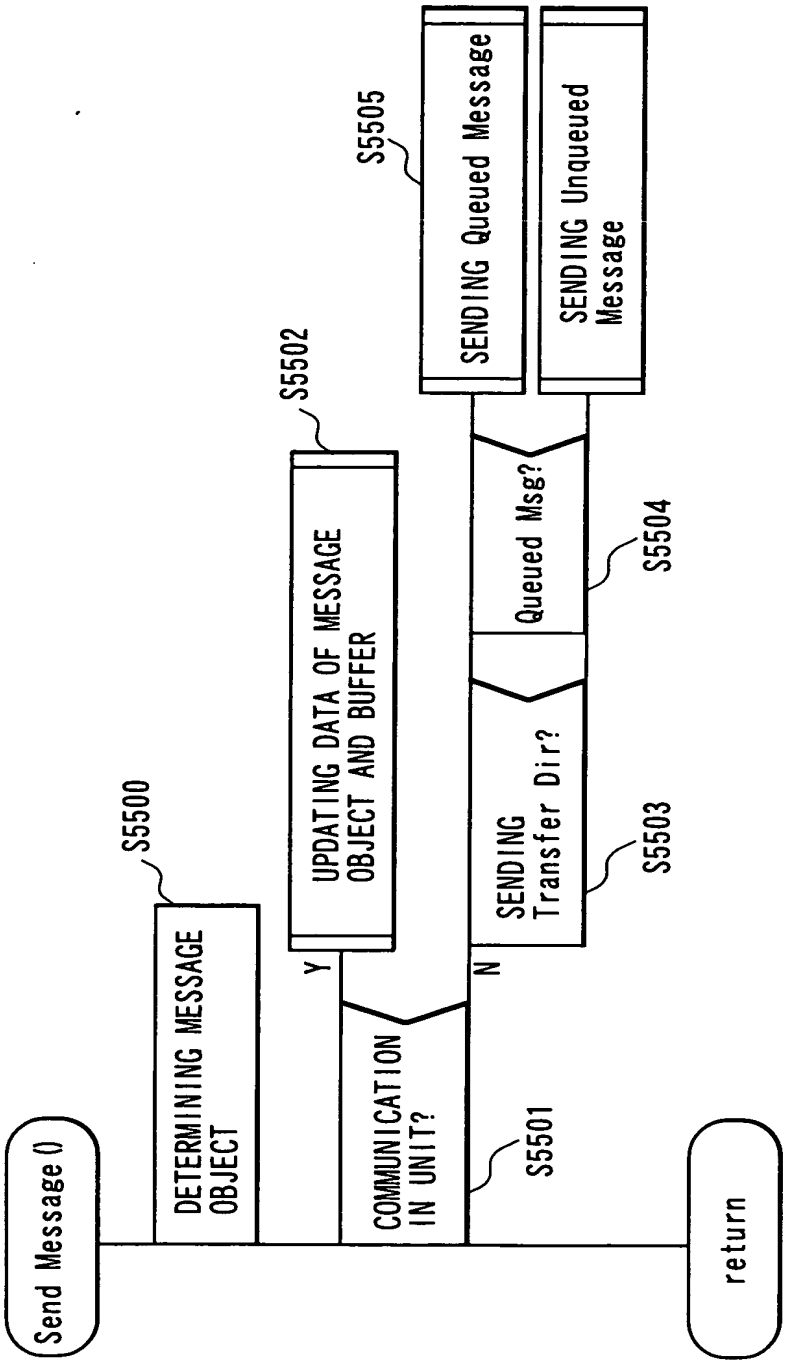
APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.54



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.55



APPROVED BY DRAFTSMAN O.G. FIG. CLASS SUBCLASS

FIG.56

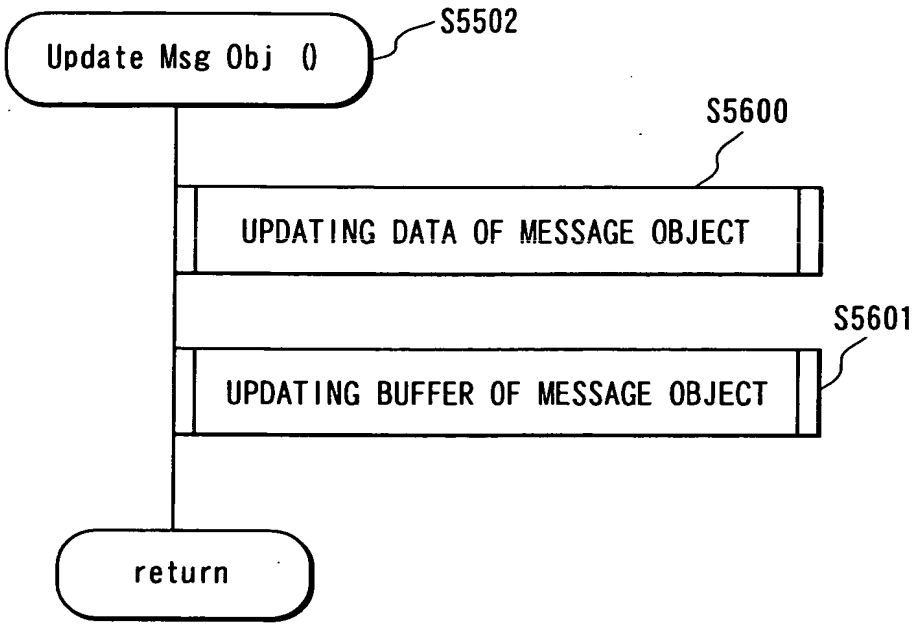
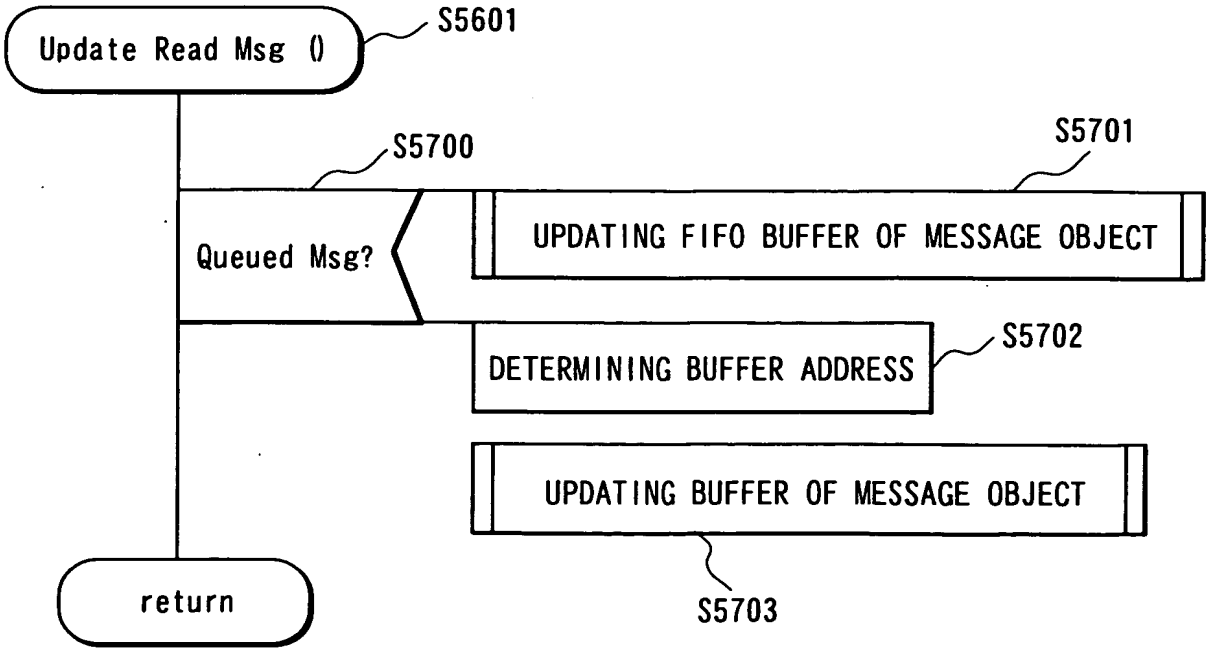
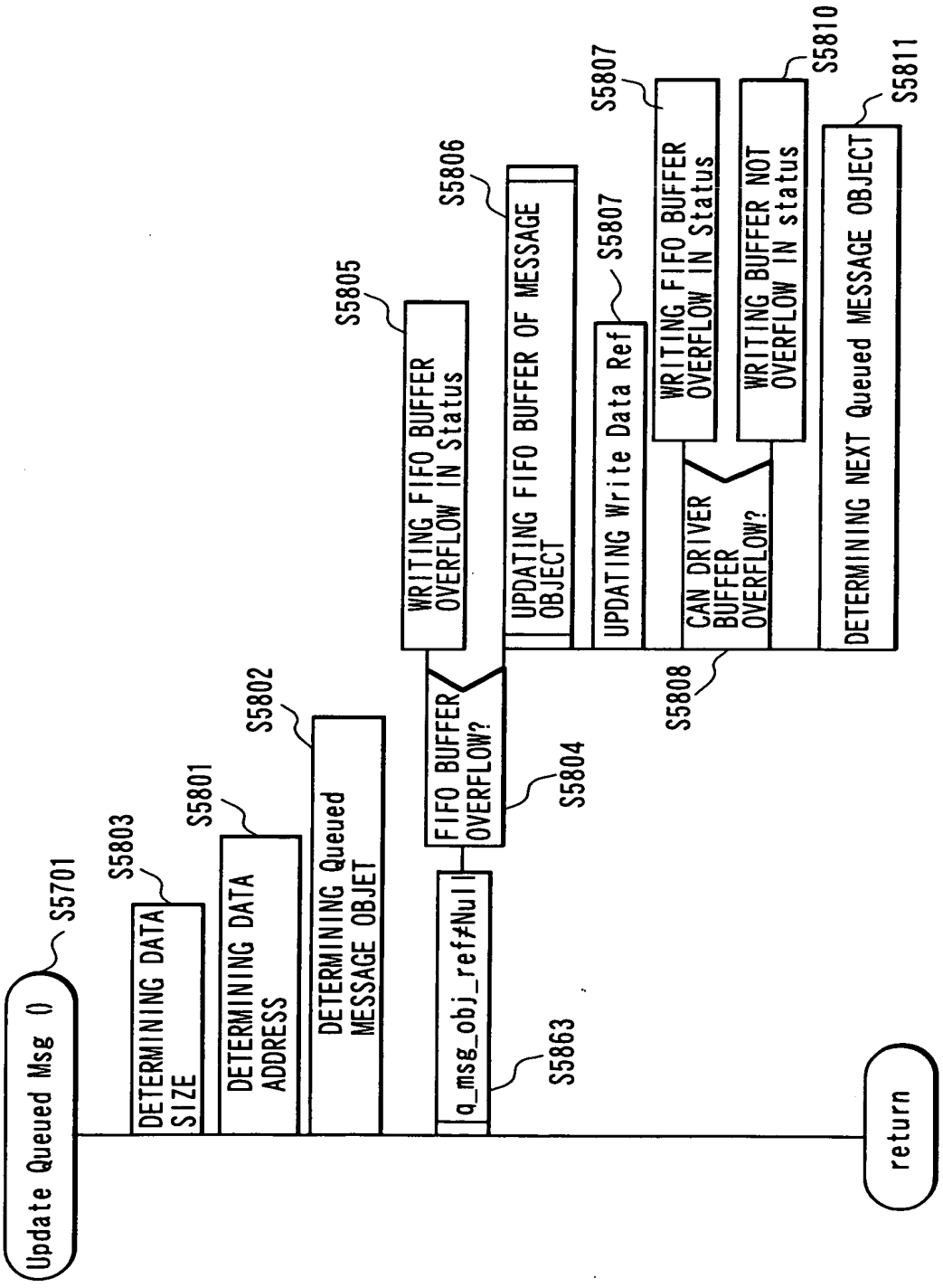


FIG.57



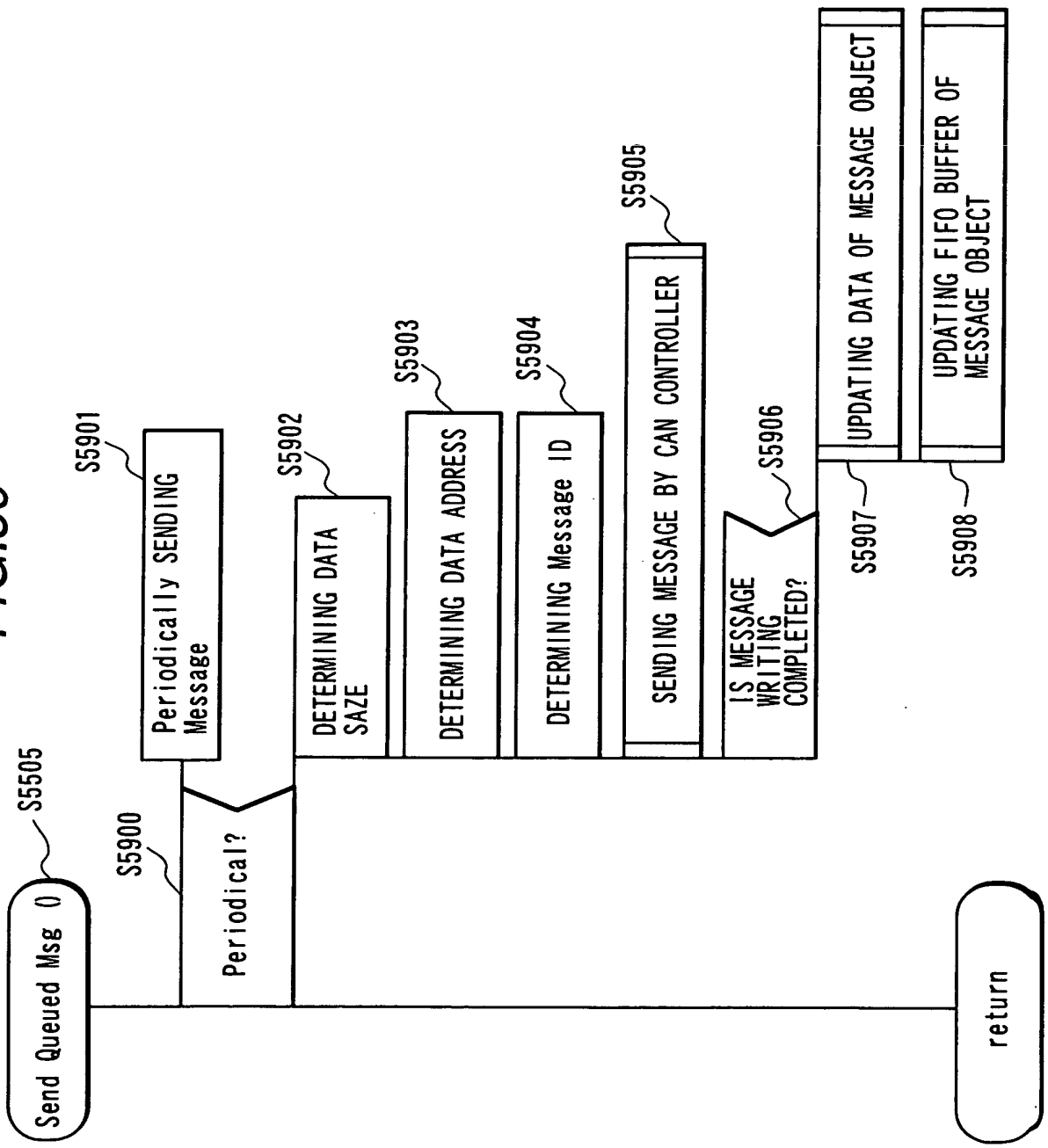
APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS
SUBCLASS

FIG.58



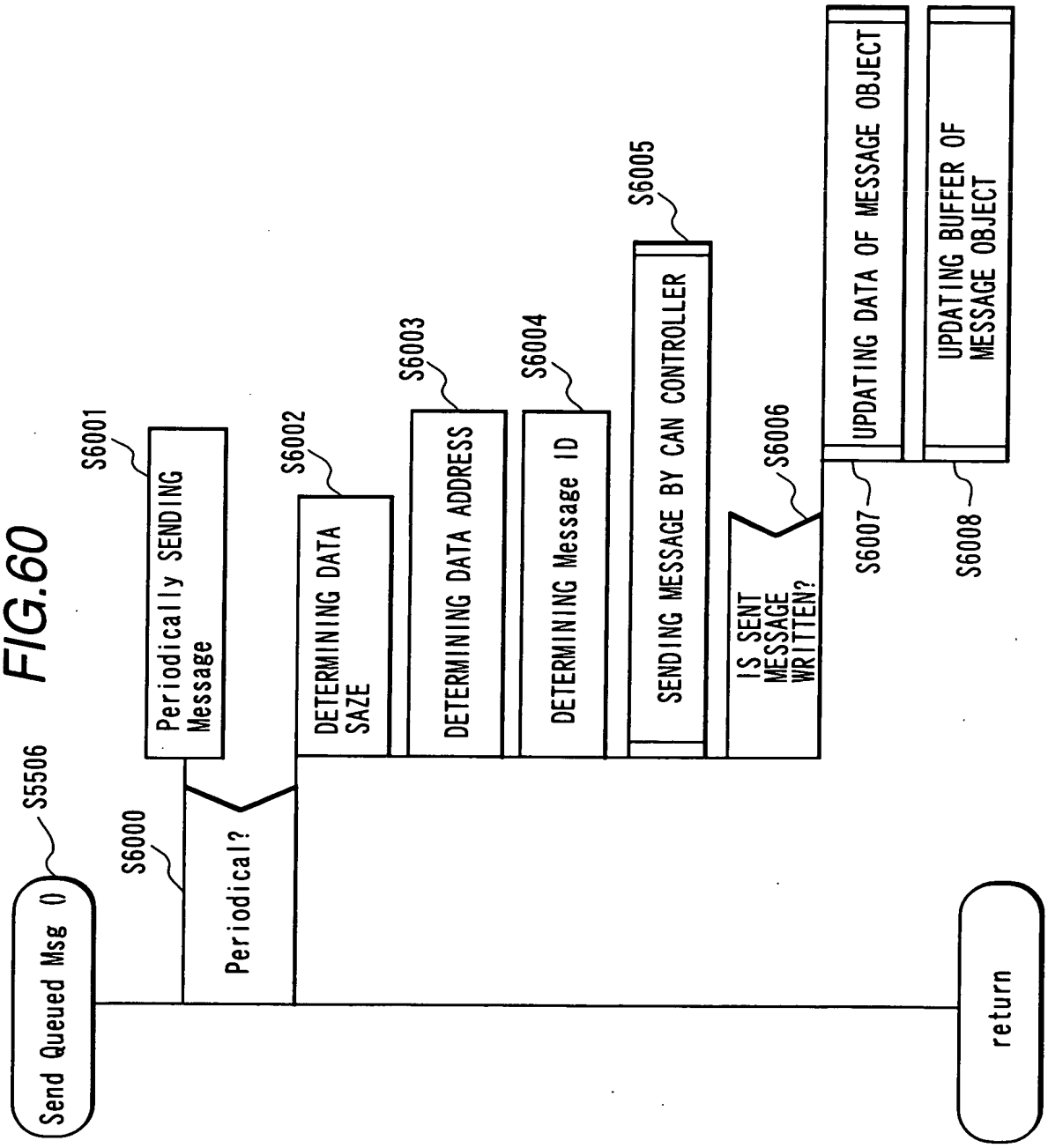
APPROVED BY DRAFTSMAN
O.G. Fig.
CLASS
SUBCLASS

FIG.59



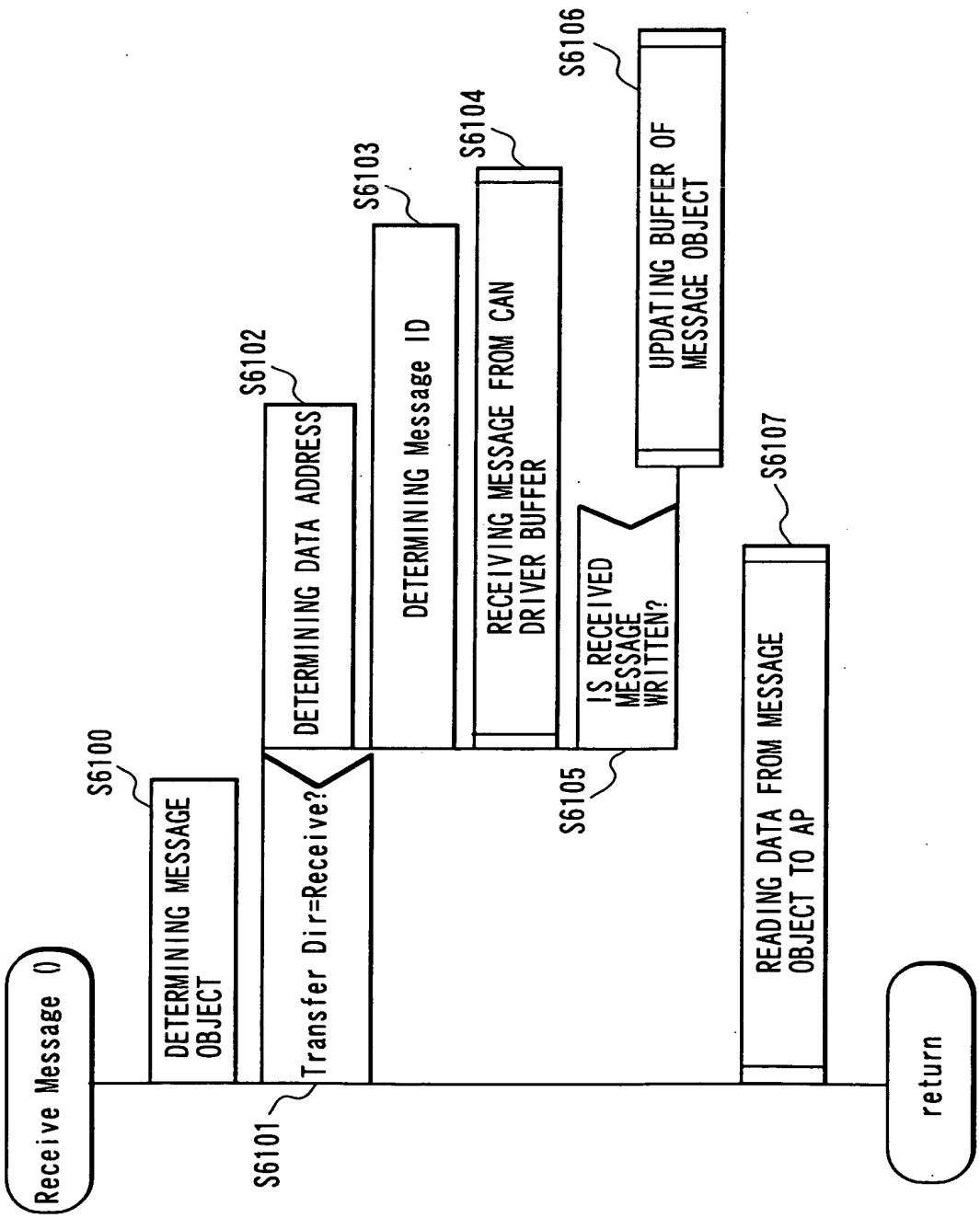
APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS | SUBCLASS

FIG.60



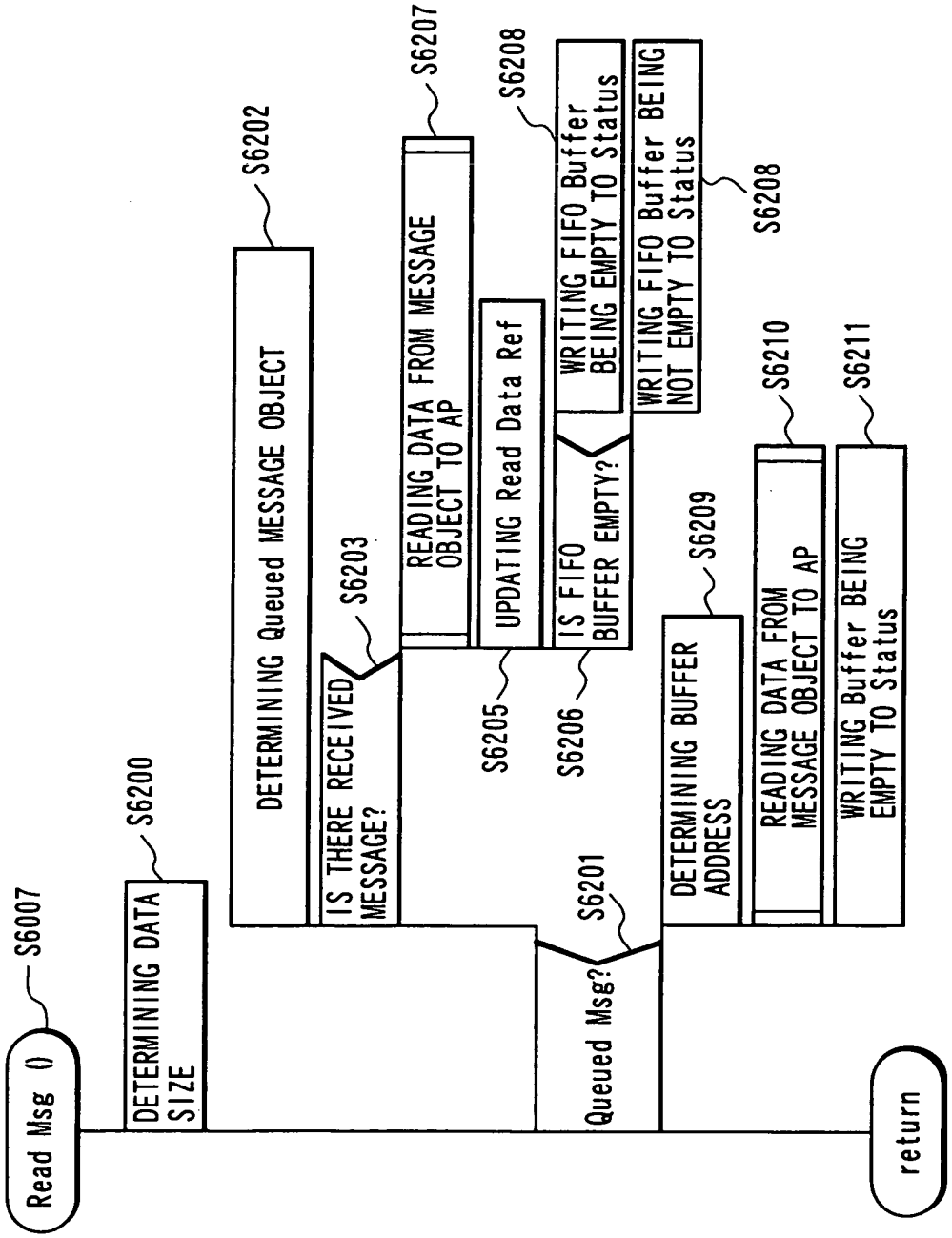
APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS SUBCLASS

FIG.61



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.62



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.63

MESSAGE ATTRIBUTE TABLE

6301 MAIL BOX NUMBER	6302 Message ID	6303 Data Size	6304 QUEUED	6305 LOCKED	6306 NOMSG	6307 LIMIT
0	100	8	0	1	1	0
1	200	8	1	0	1	0
2	500	8	0	0	1	0
.	.	.	.	.	.	.
.	.	.	.	.	.	.

FIG.67

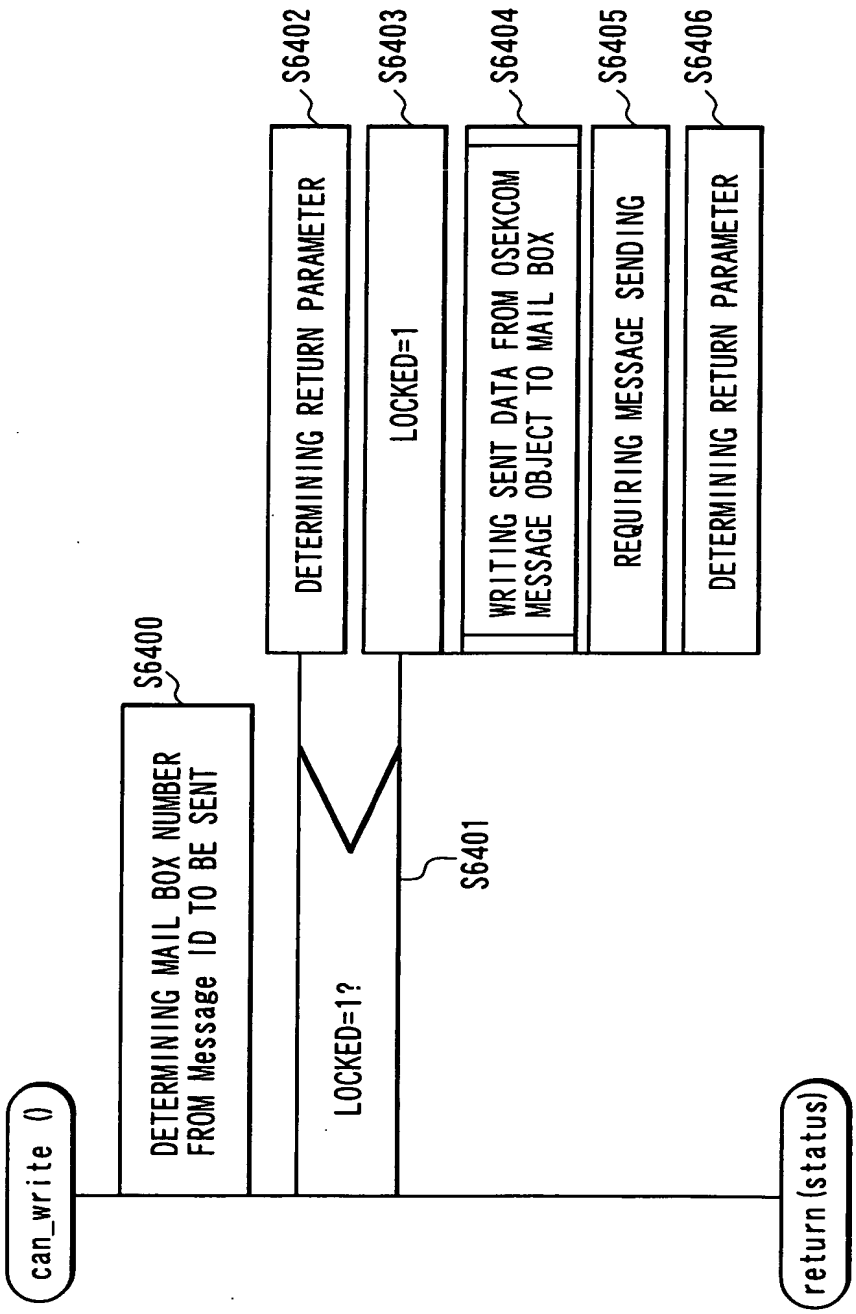
5051

TASK PRIORITY MANAGEMENT TABLE

6700 MESSAGE ID	6701 TASK PRIORITY
100	1
200	2
300	3

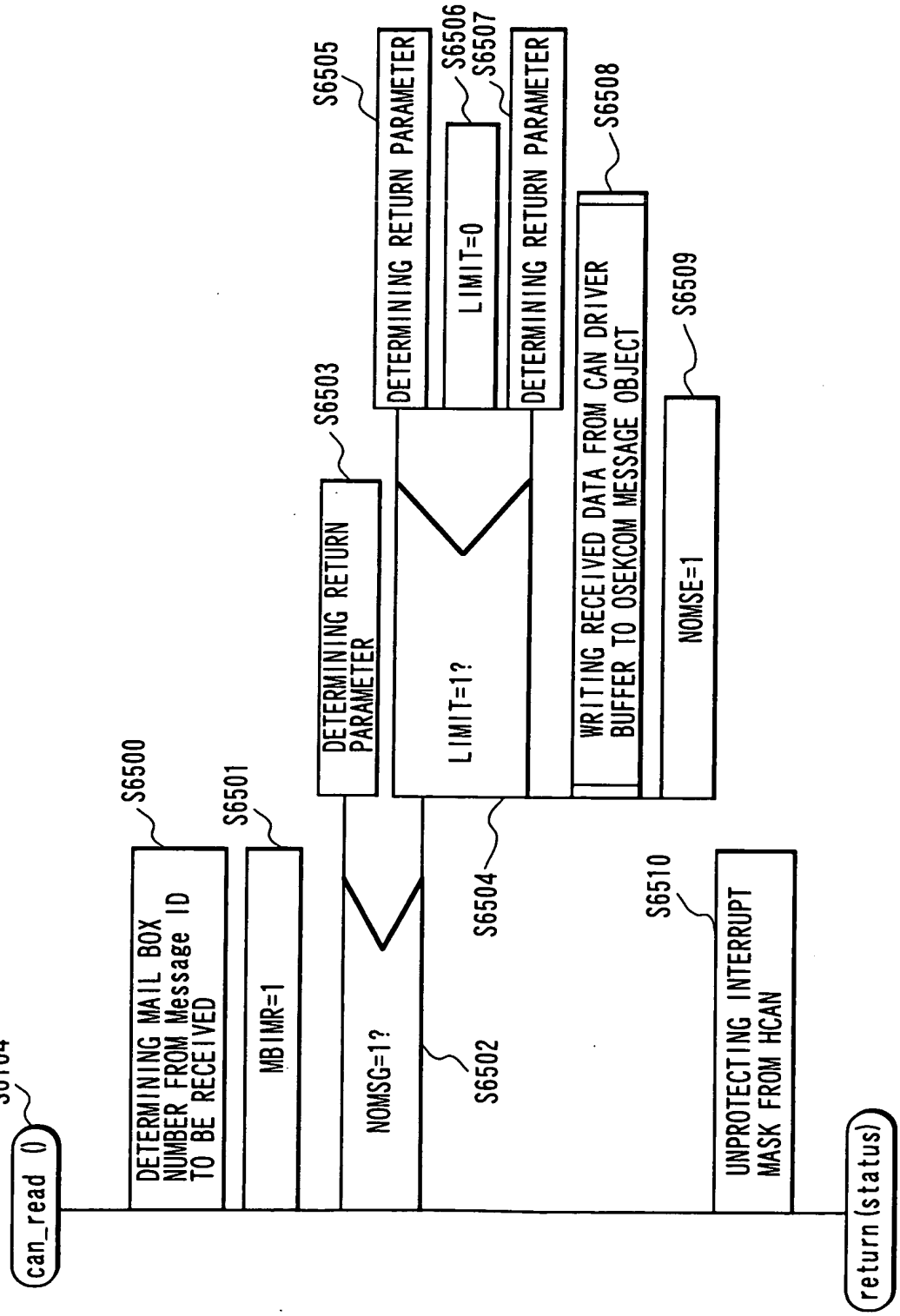
APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.64



APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS SUBCLASS

FIG.65



APPROVED O.G. FIG.
BY
DRAFTSMAN
CLASS
SUBCLASS

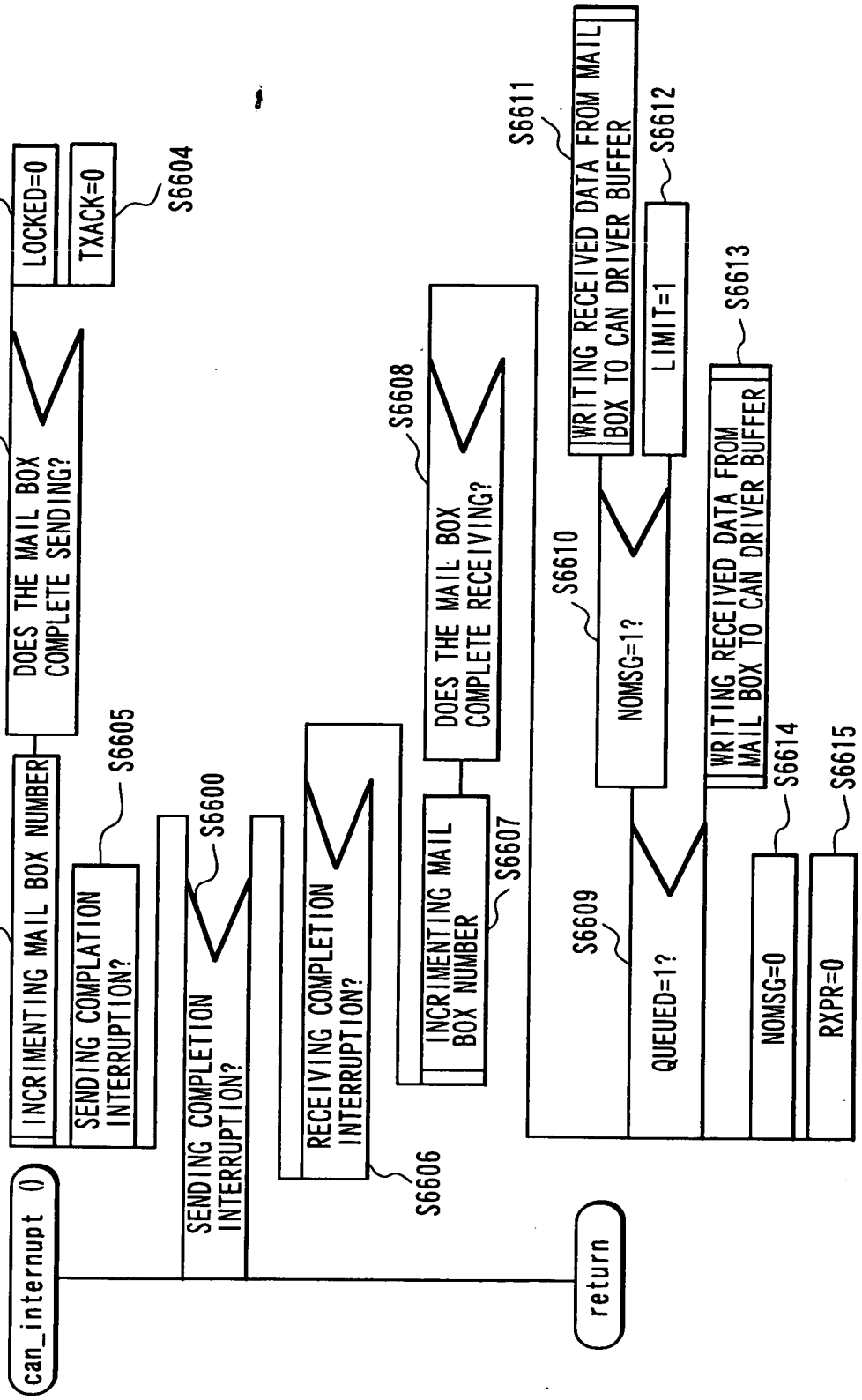



FIG.66